A142-929-10,500-L180

TEXAS AGRICULTURAL EXPERIMENT STATION

A. B. CONNER, DIRECTOR
COLLEGE STATION, BRAZOS COUNTY, TEXAS

BULLETIN NO. 403 OCTOBER, 1929

DIVISION OF CHEMISTRY

COMMERCIAL FERTILIZERS IN 1928-29 AND THEIR USES

AGRICULTURAL AND MECHANICAL COLLEGE OF TEXAS
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†As of October 1, 1929. *Dean, School of Veterinary Medicine.
**In cooperation with U. S. Department of Agriculture.
***In cooperation with the School of Agriculture.

SYNOPSIS

This is the annual Fertilizer Control Bulletin. It contains statistics regarding fertilizers sold in Texas, information regarding the fertilizer law, and analysis of samples of the fertilizer sold by different manufacturers. The extent to which the various manufacturers are coming up to their guarantees is shown.

The total sales of fertilizer in Texas for 1928-29 were 187,215 tons; in 1927-28 they were 139,126 tons; in 1926-27 they were 79,863 tons;—all exclusive of cottonseed meal sold as a feed but used as a fertilizer. Practically all the sales of mixed fertilizers were confined to about 20 analyses.

The Bulletin contains a discussion of the use of fertilizers and suggestions for their use on various crops and in various sections of the State. Tables are also given showing the approximate quantity of fertilizer used per acre and percentage of the crops fertilized for some of the counties which use fertilizer.

The order of terms for stating the analysis of fertilizer was changed September 1, 1929, from phosphoric acid first, nitrogen second, potash third, to nitrogen first, phosphoric acid second, potash third. For example, what was last season termed a 12-4-4 fertilizer will now be called a 4-12-4 fertilizer, although this Bulletin reports the work up to this point and uses the former order of statement.

A number of high-analysis fertilizers will be offered for sale in Texas next season.

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BULLETIN NO. 403 OCTOBER, 1929

COMMERCIAL FERTILIZERS IN 1928-29 AND THEIR USES

G. S. FRAPS AND S. E. ASBURY

A fertilizer law was first passed in Texas in 1899. It was revised and amended in 1911. The results of the fertilizer inspection have been published in bulletins of the Texas Agricultural Experiment Station regularly since 1906. This is the twenty-seventh Fertilizer Control Bulletin and contains statistics and suggestions as to the use of fertilizer as well as a report on the analyses made in enforcing the provisions of the fertilizer law.

Explanation of terms

Nitrogen refers to the total nitrogen in the fertilizer. It is necessary in proper amounts for the development of all parts of the plant, but an excess of nitrogen delays maturity and is liable to promote the growth of stalk and leaves at expense of fruit. Nitrogen is needed by many Texas soils.

Available phosphoric acid is the phosphoric acid which can be taken up immediately by plants. Phosphoric acid promotes the fruiting of plants, though it is necessary for the development of all parts of the plant.

Total phosphoric acid is the entire quantity of the phosphoric acid present, whether available or not. A guarantee of total phosphoric acid in place of available is made in bone, tankage, rock phosphate, and Thomas phosphate. Phosphoric acid is needed by most of the sandy soils of East Texas.

Potash is required to be soluble in water. Many Texas soils contain a sufficient quantity of potash. Potash, like nitrogen, is needed by all parts of the plant, but especially by stalk and leaves. An excess of potash delays maturity and is liable to promote growth of the stalk and leaves at the expense of the fruit.

Valuation per ton represents the approximate cost of the plant food in the unmixed raw materials, at retail, in large markets. It is not the price at which the fertilizer is sold. The selling price includes also cost of mixing, sacks, transportation, manufacturers' and dealers' profits. The valuations are decided on about September 1, and the prices may change before the active fertilizer season, which is February to April. The following valuations were used in 1928-29:

	Cents per pound
Nitrogen	22.5
Available phosphoric acid	6.0
Total phosphoric acid in Thomas phosphate, tankage, and bone meal	4.0
Potash	6.0

Information on the fertilizer bag and tag

A fertilizer tax tag is required on every bag of fertilizer before it is offered for sale or sold. The guaranteed analysis of the fertilizer is required by law to be printed on the bag or on a tag attached to the bag. Total phosphoric acid may be guaranteed on bone or tankage instead of available phosphoric acid. The information required on the package is as follows:

Net weight
Name of fertlizer in full
Name and address of manufacturer
Guaranteed analysis:
    Nitrogen, per cent
    Available phosphoric acid, per cent
    Potash, per cent

Meaning of the figures naming a fertilizer

When a fertilizer is named by figures in this Bulletin, the first figure stands for the percentage of available phosphoric acid, the second for the percentage of nitrogen, and the third for the percentage of water-soluble potash. The National Fertilizer Association, the second National Fertilizer Conference, and other organizations have adopted this order: nitrogen, phosphoric acid, potash. The order has been changed in Texas, begining September 1, 1929, to correspond with these recommendations and to aid in securing National and International uniformity in the order of terms. The order used in Texas will now be nitrogen first, phosphoric acid second, and potash third. What was an 8-4-4 fertilizer last season is now called a 4-8-4 fertilizer and the same change applies to all other grades, and these reports will so designate them hereafter.

How to calculate the valuation

The valuation of fertilizer is calculated by multiplying the composition by the valuation of each unit of plant food and adding the products. A unit is one per cent of a ton, or 20 pounds; so if the valuation of available phosphoric acid is 6 cents a pound, the valuation of a unit is 6x20=$1.20. The valuation of a unit of nitrogen at 22.5 cents a pound would be 22.5x20=$4.50; the valuation of a unit of potash at 6 cents a pound would be $1.20. The following is an example of the calculation at the prices given above:

Valuation of 4-8-4 fertilizer

Nitrogen	4x$4.50=$18.00
Available phosphoric acid	8x$1.20=$ 9.60
Potash	4x$1.20=$ 4.80
Total valuation per ton	$32.40

Quantity sold

The quantities of commercial fertilizers sold in Texas for several seasons are given in Table 1. The sales in 1928-29 were more than for

last season and are the largest yet made in Texas. Fertilizer statistics for a number of years have been published in Bulletin 350.

Table 1.—Fertilizers sold in Texas

(Not including cottonseed meal sold as feed but used as fertilizer)

1905-06	13,500 tons
1910-11	52,985 tons
1913-14	77,400 tons
1914-15	17,500 tons
1917-18	58,000 tons
1918-19	46,000 tons
1919-20	56,700 tons
1920-21	14,850 tons
1921-22	33,000 tons
1922-23	73,300 tons
1923-24	126,179 tons
1924-25	97,719 tons
1925-26	121,747 tons
1926-27	79,863 tons
1927-28	139,126 tons
1928-29	187,215 tons

Quantity of sales by grades

Table 2 contains the sales of fertilizer by grades for three seasons. Nearly 45 per cent of the fertilizer sold consisted of two grades, 12-4-4 and 10-3-3, now 4-12-4 and 3-10-3, which have practically the same ratio of plant food, namely, 1-3-1. Next comes 8-4-4 (4-8-4), nearly 11 per cent of the total.

Table 2—Fertilizer sold by grades by tons, in order of tonnage for 1928-29.

	1928-29	1927-28	1926-27	1925-26
12-4-4	51,424	30,685	8,535	13,794
10-3-3	37,110	31,305	13,120	19,055
8-4-4	22,738	10,615	3,735	3,985
10-2-2	12,236	13,640	8,817	15,089
18% Acid Phosphate	12,201	11,353	12,517	19,515
15-5-5	6,562	3,765	1,249	.....
10-4-2	5,873	4,467	1,906	3,790
20% Acid phosphate	5,022	4,811	4,053	3,992
12-6-6	4,855	1,749	.....	.....
Nitrate of soda	4,257	2,846	1,095	2,614
8-4-6	4,102	4,219	2,779	3,133
16% Acid phosphate	3,920	4,318	6,355	13,493
10-6-7	2,999	2,120	1,483	630
8-3-3	2,705	3,539	1,889	2,184
9-6-3	2,502	1,084	73	80
10-3-8	1,425	706	838	.....
Sulphate of ammonia	1,317	680	553	669
10-4-7	926	893	1,000	.....
15-0-6	890	648	1,173	899
18-6-6	919	207	75	79
Cottonseed meal	797	1,530	2,034	4,396
Muriate of potash 50%	579	440	409	569
Kainit 12.4%	498	372	1,174	1,030
9-3-0	421	315	.....	.....
12-0-4	246	250	441	337
Bone meal	117	420	477	318
8-8-4	111	.....	.....	.....
Cyanamid	50	.....	.....	.....

Table 2—Fertilizer sold by grades by tons, in order of tonnage for 1928-29—Continued.

	1928-29	1927-28	1926-27	1925-26
Sulphate of potash 48%	26	23	4	2
Kainit 14%	18	186	174	.....
30-15-15	9	.....	.....	.....
12-2-2	.....	1,060	680	2,243
Other mixed fertilizer	360	466	330	2,771
Other unmixed fertilizer	.....	267	285	533
9-5-0	.....	78	.....	.....
10-5-5	.....	69	.....	.....
12-3-3	.....	.....	1,144	3,532
8-3-5	.....	.....	597	459
12-4-0	.....	.....	202	332
7-5-5	.....	.....	.....	66
Manure salts	.....	.....	40	112
15-4.11-5	.....	.....	.....	1,984
12-3-0	.....	.....	.....	261
8-7-0	.....	.....	.....	32
16-8-12	.....	.....	.....	6
Total	187,215	139,126	79,236	121,984

Quantity of cottonseed meal used as a fertilizer

The tonnage of cottonseed meal reported in Table 2 includes only that sold as a fertilizer. Considerable quantities of cottonseed meal sold as feed are used as fertilizer, but previous to 1927 we were not in position to estimate the amount.

For the last three years, an estimate of the percentage used of mixed fertilizer, cottonseed meal, superphosphate, and other unmixed fertilizer was requested in connection with the request for fertilizer information discussed in another part of this Bulletin. The average estimate from 154 replies was 69.6 per cent mixed fertilizer, 10.1 per cent cottonseed meal, 15.0 per cent superphosphate, and 5.3 per cent other fertlizer. The actual consumption to July 1 was 180,731 tons of fertilizer; of this amount, 19,197 tons was superphosphate and 7,899 tons other materials. The consumption of superphosphate was about 33 per cent lower than the estimate. If the proportions between the superphosphate and cottonseed meal are assumed to hold good, the consumption of cottonseed meal as a fertilizer in Texas this year was about 12,700 tons. As 623 tons were sold as fertilizer, about 12,000 tons would have been sold as feed but used as fertilizer in 1929. The estimated use of cottonseed meal as a fertilizer last year was about 22,800 tons and for the previous year 30,000 tons. This does not include cottonseed meal sold in mixed fertilizer. These estimates are not considered to be at all accurate, but they seem to show a decreasing use of cottonseed meal as a fertilizer, probably caused by its high feeding value and high price.

Composition and selling price of different grades of fertilizers

Table 3 contains the average composition, the guaranteed valuation, the valuation found by analysis, and the average retail selling price per ton, of the various grades of fertilizers. The average retail selling

Table 3.—Average composition, valuation and selling price of grades of fertilizer, 1928-29.

	Number averaged	Nitrogen, per cent	Available phosphoric acid	Potash, per cent	Guaranteed valuation	Valuation found	Selling price per ton
8-3-3 fertilizer	15	3.04	8.92	3.25	$ 26.70	$ 28.33	$ 33.08
8-4-4 fertilizer	120	3.94	8.54	4.14	32.40	32.92	36.81
8-8-4 fertilizer	3	7.89	9.07	3.90	50.40	51.12	54.45
8-4-6 fertilizer	47	3.98	8.63	5.87	34.80	35.32	38.23
9-3-0 fertilizer	8	3.28	9.97	.....	24.30	26.88	31.50
9-6-3 fertilizer	18	5.74	9.35	3.41	41.40	41.16	44.37
10-2-2 fertilizer	58	2.22	10.26	2.40	23.40	25.21	28.98
10-3-3 fertilizer	183	3.13	10.14	3.14	29.10	30.08	32.72
10-3-8 fertilizer	18	3.21	10.34	7.18	35.10	35.52	39.96
10-4-2 fertilizer	28	4.00	10.22	2.48	32.40	33.29	36.58
10-4-7 fertilizer	4	4.36	10.56	6.29	38.40	39.88	44.02
10-6-7 fertilizer	27	5.98	10.45	6.92	47.40	47.77	51.83
12-0-4 fertilizer	1	0.00	12.48	3.93	19.20	19.70	27.65
12-4-4 fertilizer	259	4.08	12.08	4.18	37.20	37.99	40.16
12-6-6 fertilizer	45	5.82	12.89	5.78	48.60	48.28	47.97
15-0-6 fertilizer	7	.....	14.91	6.18	25.20	24.79	2[illegible].20
15-5-5 fertilizer	83	4.95	14.80	5.09	46.50	46.16	48.02
18-6-6 fertilizer	11	5.84	16.92	6.41	55.80	54.30	56.77
Superphosphate 16%	12	.....	17.19	.....	19.20	20.63	21.66
Superphosphate 18%	34	.....	19.31	.....	21.60	23.15	21.66
Superphosphate 20%	25	.....	20.56	.....	24.00	24.70	23.32
Kainit 12%	6	.....	16.65	.....	14.40	19.98	23.23
Kainit No. 14	1	.....	14.28	.....	16.80	17.14	21.96
Chilean nitrate of soda-potash	1	14.52	.....	18.11	79.65	86.17	67.50
Muriate of potash	9	.....	.....	49.48	60.00	59.36	52.85
Cottonseed meal	2	6.85	2.65	1.38	33.36	35.66	49.50
27-9-9	2	9.13	26.55	9.12	83.70	83.91	82.50
Sheep manure	1	1.45	.....	3.33	10.35	10.53	35.00
Manure salts	2	.....	.....	25.95	24.00	31.14	27.77
Sulphate of ammonia (all)	6	20.79	.....	.....	92.33	93.54	67.68
Nitrate of soda (all	21	15.51	.....	.....	68.04	69.81	64.65
Bone meal (all)	4	3.75	19.04	.....	31.44	32.10	49.88

price is the average of the cash retail price as furnished to the inspector by the dealer. The retail price includes handling costs, carrying charges, and the dealer's profits, as well as the items mentioned under valuation.

The guaranteed analysis is given in the first column of Table 3. It is to be noted that the average analyses are usually higher than the guaranteed analyses of phosphoric acid and potash, but that sometimes they are lower than the guarantee of nitrogen. The total valuation found exceeds the guaranteed valuation in almost every case. The exceptions are 12-6-6, 15-0-6, 15-5-5, and 18-6-6, and with three of these the differences are very slight.

Cost of plant food

Table 4 contains the retail cost of a pound of available phosphoric acid, of nitrogen, and of potash, in cents per pound, as calculated from the cash selling prices per ton of Table 3 and the guaranteed composition. It was assumed that the prices were in the same ratio as the valuations. As the prices of the same fertilizer in different places vary, these figures are not correct for any one locality, but represent averages only, and are for purposes of comparison. The prices were collected from retail merchants handling fertilizer. The fertilizers with the lowest prices are given first.

Table 4.—Approximate average retail cost of plant food found in cents per pound, averaged in order of increasing cost.

	Nitrogen	Available phosphoric acid	Potash
Sulphate of ammonia	16.43	.....	.....
Nitrate of soda	21.38	.....	.....
Muriate of Potash	.....	.....	5.29
Superphosphate 20%	.....	5.82	.....
12-6-6	22.28	5.94	5.94
27-9-9	22.28	5.94	5.94
Superphosphate 18%	.....	6.00	.....
18-6-6	22.95	6.12	6.12
15-5-5	23.18	6.18	6.18
9-6-3	24.08	6.42	6.42
8-8-4	24.30	6.48	6.48
12-4-4	24.30	6.48	6.48
10-6-7	24.53	6.54	6.54
8-4-6	24.75	6.60	6.60
10-3-3	25.20	6.72	6.72
10-4-2	25.43	6.78	6.78
Superphosphate 16%	.....	6.78	.....
8-4-4	25.65	6.84	6.84
10-3-8	25.65	6.84	6.84
15-0-6	.....	6.96	6.96
Manure salts	.....	.....	6.96
10-4-7	26.33	7.02	7.02
8-3-3	27.90	7.44	7.44
10-2-2	27.90	7.44	7.44
9-3-0	29.25	7.80	7.80
Kainit 14%	.....	.....	7.86
12-0-4	.....	8.64	8.64
Cottonseed meal	33.30	8.88	8.88
Kainit 12%	.....	.....	9.66
Sheep manure	78.30	20.88	20.88

Cost of phosphoric acid. The cheapest source of phosphoric acid is 20 per cent superphosphate. Available phosphoric acid cost about 1 per cent more per pound in 18 per cent superphosphate than in 20 per cent, and about 15 per cent more in 16 per cent superphosphate than in 20 per cent. Available phosphoric acid cost more in 16 per cent superphosphate than in the mixed fertilizers, as can be seen from the table. Phosphoric acid was most expensive in dried sheep manure, next in cottonseed meal, and then in 12-0-4, 10-2-2, and 8-3-3.

Cost of nitrogen. Sulphate of ammonia was the cheapest source of nitrogen; nitrate of soda was next. Cottonseed meal was the most expensive source of nitrogen next to dried sheep manure. Nitrogen in nitrate of soda cost about one-third more than in sulphate of ammonia. Nitrogen costs more in the mixed fertilizers than in sulphate of ammonia or nitrate of soda, as the cost of mixing enters into the cost. A pound of nitrogen cost the most in 9-3-0 fertilizer, the 10-2-2 came next, and 8-3-3 third. The lowest-priced nitrogen in the mixed fertilizer was in the 12-6-6, followed by the 18-6-6, and 9-6-3.

Cost of potash. Muriate of potash was the cheapest form of potash, and 12 per cent kainit the most expensive, a pound of potash costing nearly twice as much in kainit as in muriate of potash. Potash can be purchased more cheaply in any mixed fertilizer than in kainit. It is certainly not economical to buy kainit. Evidently a person desiring to buy unmixed potash should buy muriate of potash, and not kainit.

Table 5.—Relative cost of approximately the same amount of plant food in different grades of fertilizer.

Grade	Available Phosphoric acid	Nitrogen	Potash	Cost
	Pounds	Pounds	Pounds	
Group 1				
1 ton—18-6-6	360	120	120	$ 56.77
1.2 tons—15-5-5	360	120	120	57.62
1.5 tons—12-4-4	360	120	120	60.24
2 tons—10-3-3	400	120	120	65.42
Group 2				
1 ton—12-6-6	240	120	120	47.97
1½ tons—8-4-4	240	120	120	55.21

Relation to concentration of fertilizers

The ratios of plant food in the 10-3-3, 12-4-4, 15-5-5, and 18-6-6 fertilizers are nearly the same, as the proportions are about three parts phosphoric acid to one of nitrogen and one of potash. Table 5 shows the approximate cost of nearly equal quantities of plant food in these fertilizers. The plant food in 12-4-4 costs $3.47 more than an equal quantity in 18-6-6. The two tons of 10-3-3 costs $5.18 more than the one and one-half tons of 12-4-4, but contains 40 pounds more phosphoric acid, with a valuation of $2.40. That is, the most concentrated

mixed fertilizer was the cheapest per pound of plant food, or to put it another way, the highest-priced fertilizer per ton may be the lowest-priced per pound of plant food. This difference is caused partly by freight charges, partly by the cost of bagging, etc.

Fertilizer analyses to be sold in 1929-30

Some changes have been made in the analyses to be placed on the market next season. The 10-2-2, 8-3-3, 12-0-4, and 8-8-4 fertilizers were dropped. The 9-3-0 was replaced by 10-4-0. A number of high-analysis fertilizers were added to the list. The sale of 16 per cent superphosphate and 14 per cent kainit is to be discontinued. If we refer again to Table 4, we find that three of the grades discontinued, namely, 10-2-2, 8-3-3, and 12-0-4 (2-10-2, 3-8-3, and 0-12-4), are the most expensive mixed fertilizers per unit of plant food, and that the 16 per cent superphosphate, also discontinued, is about 15 per cent more expensive than the 18 per cent or 20 per cent superphosphate. The 9-3-0 (3-9-0), replaced by 10-4-0 (4-10-0), is also expensive. The 8-8-4 is not as expensive as the others, but was discontinued on account of small sales.

The net result of the changes is to cut out the four grades of mixed fertilizer which furnish plant food at the higher price to the farmer, leaving equally satisfactory grades in their places.

The analyses of mixed fertilizer which will be sold in 1929-30, stated in the new order of terms, nitrogen first, phosphoric acid second, potash third, is as follows:

0-15-6	5-15-5	12-24-12	Muriate of potash 48%
0-20-6	6-9-3	15-15-19	Sulphate of potash 48%
3-10-3	6-10-7	15-30-15	
3-10-8	6-12-6	16-16-21	Cottonseed meal
4-8-4	6-18-6	16-20-0	Bone meal
4-8-6	9-18-18	Superphosphate 18%	Basic slag
4-10-0	9-27-9	Superphosphate 20%	Tankage
4-10-2	10-0-10	Kainit 12%	Sheep manure
4-10-7	10-20-10	Sulphate of ammonia 20%	
4-12-4	10-30-10	Nitrate of soda 15%	Manure salts 20%:

It will be noticed that the ratio of both nitrogen and potash to phosphoric acid is 1 to 3, or nearly so, in 3-10-3, 4-12-4, 15-5-5, 6-12-6, 9-27-9 and 10-30-10, and that it is 1 to 2 in 4-8-4, 6-12-6, 10-20-10, 12-24-12, and 15-30-15.

Fertilizer statistics, 1929

In June, 1929, a blank requesting information regarding the use of fertilizer was sent out to farmers, fertilizer dealers, county agents, and others in position to give information. These were distributed chiefly in the counties using fertilizer, though some were distributed in different sections. Our thanks are due to those who gave the information requested.

Table 6 gives the average percentages of the various crops fertilized.

Table 7 gives the average quantity per acre used on the various crops.

Table 6.—Estimated percentage fertilized of the cotton, corn, etc.

County	Number averaged	Cotton	Corn	Irish potatoes	Sweet potatoes	Tomatoes	Onions	Melons	Strawberries	Peach trees	Other fruits	Other vegetables	Other field crops
Anderson	2	20	6	50	.....	80	.....	50	.....	20	.....	.....	.....
Bowie	7	76	38	59	33	42	38	35	40	.....	.....	18	.....
Camp	2	50	35	98	88	.....	.....	.....	.....	.....	.....	.....	.....
Cass	19	87	57	85	55	79	85	176	91	11	24	63	21
Cherokee	6	73	24	85	41	100	.....	87	.....	10	.....	100	8
Freestone	2	70	63	90	80	90	90	90	75	.....	.....	75	75
Gregg	4	74	32	92	34	95	95	50	.....	10	.....	70	25
Harrison	7	98	55	55	32	39	41	65	50	18	10	18	10
Henderson	12	46	17	78	36	93	64	65	20	39	28	67	13
Hopkins	8	46	26	75	63	40	50	56	10	5	.....	50	25
Houston	5	57	28	80	23	93	20	60	.....	45	10	35	75
Limestone	2	70	70	35	50	.....	.....	.....	.....	.....	.....	.....	.....
Marion	3	77	78	95	65	92	100	88	75	.....	.....	95	45
Nacogdoches	8	83	30	70	69	100	65	75	.....	5	.....	.....	30
Panola	4	90	55	82	58	80	90	95	98	.....	40	77	63
Rusk	4	76	26	70	50	93	58	82	25	22	.....	90	10
San Augustine	2	78	10	10	15	100	.....	30	.....	.....	.....	.....	.....
Shelby	6	58	35	37	51	1	2	50	.....	2	2	29	4
Smith	20	69	38	85	55	99	79	72	96	25	24	69	41
Titus	2	53	20	88	40	85	75	90	50	10	10	75	.....
Waller	2	31	20	53	3	70	.....	100	.....	.....	.....	.....	.....
Wood	3	72	22	62	50	100	100	43	2	1	.....	2	5
Van Zandt	5	68	29	75	65	100	5	65	.....	.....	.....	63	10

Table 7.—Estimated average pounds of fertilizer applied per acre, when used.

County	Number averaged	Cotton	Corn	Irish potatoes	Sweet potatoes	Tomatoes	Onions	Melons	Strawberries	Peach trees	Other fruits	Other vegetables	Other field crops
Anderson	2	250	200	400	.....	400	.....	200	.....	100	.....	.....	.....
Bowie	7	221	150	483	267	467	450	250	150	.....	.....	350	.....
Camp	2	175	150	750	250	.....	.....	.....	.....	.....	.....	.....	.....
Cass	19	199	156	378	231	275	288	306	100	.....	.....	200	190
Cherokee	6	233	180	575	250	658	.....	183	.....	300	.....	533	200
Freestone	2	163	163	400	300	300	300	300	300	.....	.....	300	200
Gregg	4	231	175	533	200	650	.....	275	.....	100	30	100	.....
Harris	2	150	150	300	300	200	200	200	350	150	150	200	200
Harrison	7	214	157	300	220	225	200	238	300	157	125	175	100
Henderson	12	207	195	363	225	529	380	200	200	250	250	300	200
Hopkins	8	178	178	343	147	202	275	175	400	200	.....	200	200
Houston	5	420	150	317	217	383	150	167	.....	150	100	300	300
Jasper	1	200	150	250	200	600	.....	200	100	.....	.....	.....	.....
Jefferson	1	200	200	300	200	300	300	300	400	200	200	150	100
Limestone	2	113	100	400	300	.....	.....	.....	.....	.....	.....	.....	.....
Marion	3	192	200	467	200	467	350	300	333	.....	.....	400	150
Nacogdoches	8	228	169	317	217	443	350	283	.....	.....	.....	200	150
Orange	1	150	150	250	200	200	.....	.....	.....	.....	.....	.....	.....
Panola	4	213	181	533	350	400	1000	300	400	.....	200	450	388
Rains	1	200	200	400	200	300	300	100	.....	.....	.....	300	150
Robertson	2	125	113	88	75	25	.....	75	.....	100	50	50	75
Rusk	4	200	200	433	350	500	450	350	400	225	.....	.....	.....
Sabine	1	200	200	.....	150	200	.....	.....	.....	.....	.....	.....	.....
San Augustine	2	200	200	.....	500	400	.....	300	.....	.....	.....	.....	.....
Shelby	6	193	180	325	263	300	.....	300	.....	.....	.....	300	150
Smith	21	214	201	392	267	515	300	350	555	250	317	350	283
Titus	2	200	150	400	425	300	300	300	300	200	200	200	.....
Upshur	1	200	200	300	200	.....	.....	.....	.....	.....	.....	.....	.....
Waller	2	138	92	175	100	250	.....	175	.....	.....	.....	.....	.....
Wood	3	220	150	433	367	400	400	188	.....	.....	.....	500	100
Van Zandt	5	195	150	450	200	400	300	275	.....	.....	.....	308	.....

Additional data were received, but the tables include only averages for certain counties. The acreage planted to various crops in the various counties is not available at the present time. The data are not considered to have any high degree of accuracy, but can only be considered as indicative of conditions.

Free analysis

Fertilizer samples, if taken in accordance with the requirements of the law, will be analysed free of charge. Those who desire the free analysis of a sample of fertilizer should write for a blank "Application for Free Fertilizer Analysis," to the State Chemist, College Station, Texas, before taking any sample. The proper sampling of a fertilizer requires care. If the sample is not properly taken, it does not represent the lot of fertilizer, and the analysis may be better or poorer than the goods actually are.

Analysis of fertilizers, 1928-29

Table 10 contains a list of the samples of fertilizer subject to analysis in the season beginning September 1, 1929. Analyses below guarantee are brought out in heavy type. Practically all the samples of fertilizer were collected by our inspectors. Analyses and inspection were made by S. E. Asbury, T. L. Ogier, Waldo Walker, J. E. Evans, G. S. Crenshaw, and Gideon Smith.

Relation of valuation guaranteed to valuation delivered

Table 8 contains the average guaranteed valuation, and the average valuation found by our analyses, for all manufacturers doing business in Texas. In the preparation of this table, all analyses made were averaged, even though several were made of each brand and fertilizer materials are included as well as mixed fertilizers.

Table 8.—Average valuation of all fertilizers guaranteed and found, in dollars a ton.

	Number avaraged	Guaranteed valuation	Valuation found
American fertilizer and chemical works	3	$ 32.90	$ 32.11
Arkansas Fertilizer Co	37	32.76	33.10
Armour Fertilizer Works	178	38.76	39.01
Barber, George L. and Son	1	67.50	69.21
The Barrett Company	3	86.64	87.74
Bryan Cotton Oil and Fertilizer Co	9	24.70	26.97
Davison-Pick Fertilizers, Inc	35	33.64	33.64
East Texas Cotton Oil Co	8	30.94	32.91
Farmer's Cotton Oil Co	9	33.00	34.82
Fidelity Chemical Corporation	48	34.79	36.53
Ford Motor Co	2	93.60	93.96
Gate City Fertilizer Co	6	37.35	37.78
Gilmer Cotton Oil and Fertilizer Co	6	30.60	30.23
Home Fertilizer Co., Inc	23	33.66	32.47
Hope Fertilizer Co	20	35.43	34.62
Houston Packing Co	1	35.05	36.86
Longview Cotton Oil Co	24	32.21	33.69
Marshall Cotton Oil Co	20	33.35	34.09
Meridian Fertilizer Factory	97	33.26	34.89
Mixson Bros	11	33.08	34.89

Table 8.—Average valuation of all fertilizers guaranteed and found, in dollars a ton —continued.

	Number avaraged	Guaranteed valuation	Valuation found
Nitrate Agencies Co	6	70.47	72.82
Oil Mill and Fertilizer Works	16	38.08	39.62
Pacific Manure and Fertilizer Co	1	10.35	10.53
Palestine Oil Mill and Fertilizer Co	72	35.01	35.95
Pate Bros	20	31.11	33.95
Pelican Fertilizer Works	1	37.20	38.21
Pittsburg Cotton Oil Co	20	33.78	33.78
Planters Fertilizer and Chemical Co	20	41.67	41.98
Thomas Self	11	34.69	33.47
Shreveport Fertilizer Works	36	34.59	35.20
Smith County Cotton Oil and Fertilizer Co	25	34.63	35.71
Swift & Co., Fertilizer Works	180	36.42	37.57
Temple Cotton Oil Co	1	67.50	71.15
Texas Chemical Co	2	28.23	27.83
Texas Farm Bureau Service Corporation	19	33.00	33.11
Tri-State Fertilizer and Lumber Co	7	30.81	30.04
Tyler Fertilizer Co	13	32.79	33.71
Virginia-Carolina Chemical Corporation	69	33.90	33.91

Table 9 contains the average guaranteed analyses, and the average analyses found for *mixed* fertilizers sold by the various manufacturers. The averages in these tables do not include superphosphate, nitrate of soda, and other fertilizer materials, but only the mixed fertilizers.

Averages below guarantee

Whenever any lot of fertilizer is 4 per cent or more below guarantee, the law requires all persons who have sold this lot of fertilizer to make good the deficiency to all purchasers. The rebate is paid by the manufacturer to the dealer and by the dealer to the customer. During the last season, rebates were required on 80 lots of fertilizer.

Investigations under the fertilizer law

The State Chemist is required by the fertilizer law to "investigate the composition, properties, and agricultural values of fertilizers, or of fertilizer materials, or ingredients of fertilizer sold, offered for sale within the State of Texas, and shall publish his results as he may find."

Relation to Experiment Station work

The work of the State Chemist is closely related to the chemical work of the Experiment Station. In his capacity as Chief of the Division of Chemistry of the Experiment Station, the State Chemist is carrying out extensive investigations into the fundamental properties of soils, especially with respect to their content of plant food. This work is related closely to the use of fertilizers, and is connected with investigations as to the agricultural values of fertilizers required by the Fertilizer Control, for fertilizers vary in effect upon the different soils.

Table 9.—Average composition of mixed fertilizer, guaranteed and found.

Manufacturer	Number averaged	Phosphoric acid per cent		Nitrogen per cent		Potash per cent		Valuation per ton	
		Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found
American Fertilizer and Chemical Works	3	10.00	9.09	3.67	3.78	3.67	3.48	$ 32.90	$ 32.11
Arkansas Fertilizer Co	35	10.64	10.71	3.56	3.58	3.53	3.69	33.00	33.38
Armour Fertilizer Works	155	12.05	12.28	4.36	4.33	4.61	4.53	39.62	39.63
Bryan Cotton Oil and Fertilizer Co	9	12.67	14.05	1.67	1.77	1.67	1.77	24.70	26.97
Davison-Pick Fertilizers, Inc	28	10.54	10.97	3.86	3.61	4.25	4.30	35.10	34.69
East Texas Cotton Oil Co	7	10.57	10.88	3.29	3.45	3.29	4.79	32.27	34.34
Farmers Cotton Oil Co	9	9.56	10.32	3.78	3.87	3.78	4.18	33.00	34.82
Fidelity Chemical Corporation	44	10.66	10.81	3.80	4.06	4.32	4.60	35.05	36.78
Gate City Fertilizer Co	4	11.00	11.05	3.50	3.70	3.50	3.99	33.15	34.70
Gilmer Cotton Oil and Fertilizer Co	6	9.67	9.86	3.33	3.23	3.33	3.22	30.60	30.23
Home Fertilizer Co	21	11.14	9.80	3.76	4.11	3.76	3.80	33.81	33.43
Hope Fertilizer Co	20	10.90	10.67	4.10	3.87	3.80	3.66	35.43	34.62
Longview Cotton Oil Co	23	10.57	11.27	3.61	3.55	3.39	4.04	32.99	34.35
Marshall Cotton Oil Co	20	10.10	10.42	3.85	3.85	3.25	3.56	33.35	34.09
Meridian Fertilizer Factory	88	10.39	10.79	3.72	3.87	3.76	3.99	33.70	35.15
Mixson Bros	11	11.00	10.43	3.18	3.57	4.64	5.26	33.63	34.89
Oil Mill and Fertilizer Works	15	10.73	11.26	4.60	4.71	4.67	4.91	39.18	40.63
Palestine Oil Mill and Fertilizer Co	61	10.39	10.68	3.77	3.88	3.82	3.95	34.02	35.00
Pate Bros	17	9.53	11.58	3.65	3.73	3.88	4.02	32.51	35.51
Pelican Fertilizer Works	1	12.00	12.05	4.00	4.17	4.00	4.15	37.20	38.21
Pittsburg Cotton Oil Co	18	9.78	9.55	3.61	3.67	3.83	3.85	32.58	32.60
Planters Fertilizer and Chemical Co	19	11.79	12.20	4.58	4.51	4.63	4.58	40.31	40.42
Shreveport Fertilizer Works	32	10.44	10.71	3.94	3.95	3.66	3.90	34.63	35.30
Smith County Cotton Oil and Fertilizer Co	25	9.88	10.43	4.08	4.08	3.68	4.05	34.63	35.71
Swift & Co., Fertilizer Works	162	10.96	11.29	4.09	4.21	4.36	4.46	36.77	37.85
Texas Farm Bureau Service Corporation	17	10.71	10.41	3.88	3.91	3.35	3.58	34.34	34.40
Thomas Self	10	11.30	9.46	4.00	4.03	3.70	4.10	36.00	34.42
Tri-State Fertilizer and Lumber Co	6	10.33	9.83	3.50	3.50	3.50	3.55	32.35	31.79
Tyler Fertilizer Co	12	10.08	9.89	3.92	4.11	3.17	3.43	33.52	34.48
Virginia-Carolina Chemical Corporation	60	10.67	11.04	3.73	3.59	4.15	4.20	34.58	34.37

Sulphur and gypsum as a fertilizer

We are unable to recommend the use of sulphur or gypsum as a fertilizer in Texas. The experiments which have been carried out do not show satisfactory results under Texas conditions.

Greensand marl

Extensive deposits of greensand marl are found in Texas, and from time to time attempts are made to exploit some deposit commercially. Most of these deposits are low in plant food. A deposit of greensand marl containing much more plant food than usual is found near San Antonio. One sample of this marl was found to contain 100 pounds total phosphoric acid and 18 pounds of acid-soluble potash in a ton. It does not contain any available phosphoric acid or any water-soluble potash, and so can not be compared directly with a commercial fertilizer.

The greensand marl found near San Antonio varies in composition. It contains 4 to 6 per cent total phosphoric acid and 2 to 3½ per cent total potash. The phosphoric acid is not in the form termed available in fertilizer and the potash is not soluble in water as is required in fertilizer. It is not possible to say exactly what would be the value of this material compared with commercial fertilizer, but it would perhaps have about one-fourth the value of the same plant food in commercial fertilizer. If the greensand marl contains 10 per cent of phosphoric acid and potash together in the forms present in commercial fertilizer, it would have a fertilizer valuation of about $12 a ton. As the plant food in this material is less easily taken up by plants, it would probably have a value of about one-fourth of this, or about $3 a ton.

The study of past work indicates that 5 to 15 tons of greensand marl should be used to the acre. The material contains no nitrogen and for this reason is not a balanced fertilizer. It would be well to supply nitrogen in the form of well-rotted manure or use such fertilizer material as nitrate of soda or sulphate of ammonia in addition to the greensand marl.

Deposits of greensand marl in New Jersey were formerly used to a considerable extent, but are little used now that commercial fertilizers are available.

Information concerning use of fertilizer

Information regarding the nature and use of fertilizer is contained in Bulletin 167, which will be sent free on application. Considerable changes have taken place since the bulletin was written, however. Suggestions for the use of the various fertilizers are given below.

General considerations on the use of fertilizers

Fertilizers supply the three forms of plant food most necessary for growing crops, namely, nitrogen, phosphoric acid, and potash. For best results, other conditions should be favorable, such as soil in good physical condition, a well-prepared seed bed, good seed, good cultivation, and

suitable rotation. Nitrogen is the most expensive plant food, and for this reason the amount of fertilizer used generally does not supply all the nitrogen required by the crop. A cropping system which includes the regular growing of legumes, such as clover, cowpeas, or peanuts, should be followed for the purpose of securing nitrogen from the air, provided the legume crops can be used to advantage. Such a system also adds humus to the soil, utilizes time and labor to better advantage, aids in destroying insect pests and plant diseases, and has other favorable effects.

The proper fertilizers to use depends upon the kind of soil, the climate, the crop, how long the soil has been in cultivation, whether or not it has grown legumes to be turned under or grazed off, what the soil will produce without fertilizer, and other conditions.

Old soils, or sandy soils generally, need more nitrogen than new soils or clay soils. Soils having a legume rotation need less nitrogen than those cropped constantly to non-legumes.

Clay soils and soils with clay or loam subsoils in cultivation less than 15 years need little potash in Texas for ordinary farm crops, but light sandy soils with sandy subsoils may need potash. Larger amounts of fertilizer may be profitably used on crops with a high acre value, such as fruit or truck crops, than on ordinary farm crops. The fertilizer on cotton may profitably be twice as much as that used on corn.

Best results are secured by well-balanced plant food in the soil. An excess of nitrogen or a sufficiency of potash is shown by the production of a heavy stalk or vine, with a deficiency of fruit or delayed maturity. If such land has not been fertilized, probably the best fertilizer to use is 200 to 400 pounds of superphosphate to the acre. This will frequently (but not always) promote fruiting. If a fertilizer has been used, the remedy is to decrease the percentage of nitrogen and to increase the percentage of phosphoric acid in subsequent applications. The percentage of potash may also be decreased.

Excess of nitrogen in the soil with truck crops may also produce rapid growth but soft tissues which do not stand up well under shipment. Strawberries, for example, produce large fruits which are not firm enough to ship well. Lettuce, cabbage, and similar crops may not be firm enough to stand shipment. Increased quantities of potash will not prevent softness caused by excess of nitrogen.

Excess of nitrogen renders some plants more liable to attack by some diseases. Excess of nitrogen also delays maturity. Excess of potash, like excess of nitrogen, delays maturity of the crop. A well-balanced fertilizer should be selected, due consideration being given to the soil, the crop, the character of growth, and other conditions.

How and when to apply

Fertilizer is generally applied under the seed at the time of planting. It should not touch the seed, but should be one to three inches below it or at the side. A combined planter and fertilizer distributor may be

used, but care should be taken to select a machine which applies the fertilizer properly, as some machines are not satisfactory.

Fertilizer may also be placed in the ground not more than three weeks before planting. If applied too early, there is danger of loss of plant food by fixation or leaching.

Applications of more than 600 pounds of fertilizer to the acre are best made partly in the drill and partly broadcast.

In dry sections, where the soil above the seed is liable to dry out, the fertilizer may be applied on the firm soil at the side of the seed. Sometimes it may be advisable to put it in when the land is bedded, in sections where there is little danger of loss by leaching.

How much to apply

Farmers not experienced in the use of fertilizer should begin with moderate amounts, 200 to 400 pounds to the acre for cotton or corn and 400 to 500 pounds for truck crops. Larger amounts may be tried on a small scale and then larger amounts used if these trials appear to justify it. The approximate amounts to use are indicated below.

Side dressings

More than one application of fertilizer is not usually recommended for cotton or corn. Under exceptional conditions, however, more than one application may be made for cotton or corn. These conditions would include: (1) when more than 500 pounds of fertilizer to the acre is to be used; (2) when the plants appear to be suffering from deficiency of available plant food, particularly nitrogen; (3) if the weather in the spring has been excessively wet, so as to cause considerable leaching; (4) on deep sandy soil, where the plant food is likely to leach out.

Side dressings of cotton with nitrate of soda or sulphate of ammonia are not generally to be recommended, but may be used when the fertilizer applied at planting does not contain enough nitrogen, or on deep sandy soil, where there may be considerable loss from leaching. Under such conditions, 100 pounds per acre of nitrate of soda or sulphate of ammonia may be applied to cotton just after the first chopping.

Corn may frequently use to advantage a side dressing of nitrate of soda or sulphate of ammonia applied when the corn is knee-high.

Side dressings are frequently applied to truck crops. In such case a complete fertilizer is applied before or at the time of planting, and one or more side dressings of sulphate of ammonia or nitrate of soda afterwards. The reason for this procedure is that there is little danger of loss of phosphoric acid or potash by leaching, while soluble nitrogen is much more easily lost by leaching.

Fertilizers for East Texas

The soils of East Texas as a general rule respond well to fertilizers, and the recommendations made here apply chiefly to this section of the

State. Many of the soils of East Texas are sandy and low in phosphoric acid and nitrogen; they are usually better supplied with potash but sometimes they are low in potash. The heavier soils and the bottom lands are much better supplied with plant food.

Fertilizers for the black lands

The heavy black limestone soils of Central Texas do not respond well to fertilizers. Sometimes fertilizers give good results, but frequently they do not, and in some cases they give satisfactory results one year and unsatisfactory the next. These soils appear to need vegetable matter first, such as is supplied by well-rotted manure, by legume crops turned under or grazed off, or by winter crops. A rotation is also of advantage (see Bulletin 365).

Sandy lands in this section will probably respond to fertilizer, though little has been used on them.

Fertilizers for West Texas

Some of the lighter soils of West Texas are low in phosphoric acid and potash, and fertilizers will probably be needed in this section of the State as time goes on. In fact, fertilizers have already been used with good results in some sections. Some of the soils of West Texas contain no more plant food than those of East Texas, but it is probable that the roots of the plants penetrate deeper and have more soil to feed upon, so that the plant is able to secure more plant food than from the corresponding soil in the eastern part of the State.

When the fertilizers are used in Texas west of the black-land section, it is suggested that somewhat smaller amounts be used than is recommended for East Texas, unless the land is irrigated. Also, unless the land is irrigated, care should be taken that the fertilizer is in the firm soil in which the plant grows, not in the loose earth, which is likely to dry out.

Fertilizers for the Rio Grande Valley

The soils of this section are generally well supplied with plant food, especially with potash. When the soils are new, they may contain an excess of nitrogen, and tend to produce a heavy growth of stalk and leaves, with deficiency of fruit. Superphosphate is perhaps the best fertilizer to use in such soils, where there is reason to believe an abundance of nitrogen is present.

After having been under cultivation several years, these soils are likely to need nitrogen first, as the nitrogen is most readily exhausted. As it is desirable to avoid an excess of nitrogen, moderate quantities of nitrogen should be used at first. These soils are high in potash, and are less likely to need potash than the East Texas soils, which are lower in potash. However, some potash may be used, especially as the cropping is heavy, but there is no need at present for the percentage of potash to exceed the percentage of nitrogen.

Our suggestion at present for these soils would be then to begin with superphosphate, if the vegetative growth is very heavy. Follow with 6-18-6 or 4-12-4, or begin with one of these if vegetative growth is not excessive. In the course of time one would reach such truck fertilizers as 4-8-4, 6-12-6, 6-9-3, or 6-10-7.

Fertilizers for the Gulf Coastal Plains

There is considerable variation in the soils of the Gulf Coastal Plains. Some of the soils in the southern section are very sandy, and somewhat low in plant food. They should have about the same fertilizer as the sandy lands of East Texas. Most of the soils are heavier and better supplied with plant food than the very sandy soils. The fertilizers suggested are the same as for the corresponding soils of East Texas. The heavy black soils at the Experiment Station at Angleton respond well to superphosphate on cotton and corn.

Some of the soils of the Gulf Coastal Plains are poorly drained. They should be well drained and placed in good condition before any fertilizer is used.

Suggestions for the use of fertilizer

The recommendations given below represent the best present information, and will be modified from time to time, as more experimental data are accumulated and further practical experience is secured. Where a fertilizer of a given ratio is suggested, a different grade with the same ratio may, of course, be used.

Cotton

Loam soils with clay or sandy clay subsoils, such as Susquehanna, Lufkin, Orangeburg, or similar soils. If 200 to 400 pounds are used, 4-10-0, 6-9-3, or 4-10-2; if over 400 pounds are to be used, 4-10-2, 4-12-4, (5-15-5, 6-18-6) 4-8-4 or 6-12-6.

Deep sandy soil, such as Norfolk sand. If 200 to 300 pounds or more are to be used, 4-12-4, 5-15-5, 6-18-6; if 300 to 400 pounds or more are to be used, 4-12-4, 4-8-4, or 6-12-6. However, these are not good cotton and corn soils and are better adapted to vegetables.

Land which produces an excessive stalk, and does not fruit well, chiefly bottom land: Use 200 to 400 pounds of 18 per cent or 20 per cent superphosphate. Nitrate of soda applied early at the rate of 100 to 200 pounds per acre sometimes gives good results on bottom lands which produce a moderately sized stalk.

Black waxy land, such as Houston black clay or heavy limestone soils of Central Texas. A systematic rotation is needed first. Fertilizers are uncertain. A trial may be made of 200 to 300 pounds of 4-10-0 or 6-9-3.

Alfalfa

Soil recently put in alfalfa: Use 200 to 400 pounds of superphosphate.

Soil in cultivation six years or longer (best to rotate): Use 200 to 600 pounds of superphosphate, or 200 to 800 pounds of 0-15-6 or 0-20-6.

Soils poor in lime should receive lime; see Bulletin 243.

Asparagus

Apply 10 to 12 tons of well-rotted manure and 500 to 800 pounds to the acre of a 4-12-4 or 6-12-6 fertilizer when setting out the plants. If the manure is not available, 600 to 900 pounds of the fertilizer could be used. Every spring apply 400 to 600 pounds of 4-8-4. Just before the cutting season is over, or soon after, apply 200 to 400 pounds of 4-8-4. Two top dressings of nitrate of soda to the acre of 100 pounds to the acre each, applied in the spring, would also be advisable in many cases.

Beans (garden) and peas (garden or English)

An application of 300 to 500 pounds of 4-12-4, 5-15-5, 6-18-6 or 4-8-4, 6-12-6 is suggested.

Beets, broccoli, cabbage, carrots, cauliflower, mustard, spinach and turnips

From 500 to 1000 pounds of 4-8-4, 6-12-6 or 4-12-4 (6-18-6 or 5-15-5) may be used and supplemented by three top dressings of 50 to 100 pounds of nitrate of soda or sulphate of ammonia, ten days to two weeks apart, beginning when the plants have begun to make a good growth. Excessive application of nitrogen and too rapid growth will impair the shipping quality.

The nitrate of soda or sulphate of ammonia should be sprinkled along the row, three or four inches from the plants, or applied broadcast after the dew has dried off or applied just before cultivation.

Citrus trees

We have not yet sufficient experiments on citrus trees in Texas on which to base recommendations for fertilizer. According to Bulletin 145 of the California Experiment Station, in California, nitrogen is chiefly needed and is best supplied in well-rotted manure; excess of nitrogen may cause "mottle leaf."

Farmers Bulletin 1343 of the United States Department of Agriculture recommends three applications for young trees on the poor sandy soils of Florida. The first should be made early in the spring, the second in summer, the third in September. For young trees in Texas, we suggest three applications of a 5-15-5 fertilizer. The total amount should be 1 to 2 pounds per tree, increasing a pound a year until trees are five to six years old.

For bearing trees, three similar applications are suggested, the first two

6-12-2 or 6-10-7, the last one 5-15-5. Bearing trees ten years old may receive 15 to 30 pounds of fertilizer each year. More fertilizer is used as the trees become larger, large trees receiving 30 to 50 pounds each.

Over-fertilized trees become affected with "die-back," especially if an excess of nitrogen is applied. Die-back is also caused by hardpan, alkali, or poor drainage. "Mottle leaf" or "freshing" affects poorly nourished trees. It is believed an excess of nitrogen may reduce the shipping quality of the fruit or cause thick skins on grapefruit.

The soils on which citrus fruit are grown in Texas are generally higher in potash than either phosphoric acid or nitrogen, and there appears no good reason at present to recommend fertilizers high in potash. The percentage of potash need not exceed the percentage of nitrogen.

Corn

Loam or clay soils with clay or sandy clay subsoils, such as Susquehanna, Orangeburg, or similar soils with legume rotation: Use 200 to 300 pounds of 18 per cent, or 20 per cent superphosphate, or 200 to 300 pounds of 4-10-0.

Loam or clay soils with clay or sandy clay subsoils, without legume rotation, in cultivation eleven years or more: Use 200 to 300 pounds of 4-10-0 or 4-10-2 or 4-12-4.

Deep sandy soil: Use 200 to 300 pounds of 4-12-4. This is not a good corn soil.

Land which produces a heavy stalk, but does not fruit well: Use 200 to 400 pounds of 18 per cent or 20 per cent superphosphate.

Black waxy land (Houston black clay), or heavy limestone land of Central Texas: A systematic rotation is needed first. Fertilizers are uncertain. A trial may be made of 200 to 400 pounds of 4-10-0 or 6-12-6.

Cantaloupes, cucumbers, squash, or watermelons

On sandy loam soils: If 200 to 300 pounds are applied, use 4-12-4 or 4-8-4. Larger applications are to be recommended, such as 300 to 500 pounds of 4-8-4, 6-12-6, or 4-8-6. An excess of nitrogen will produce a heavy growth of vine, but a deficiency of fruit. The remedy is to use more phosphoric acid or less nitrogen. Well-rotted manure should always be used with melons, if possible.

Eggplant, mustard, okra, peppers, and radishes

An application of 300 to 700 pounds of 4-8-4, 6-12-6, or 4-8-6 is suggested for trial.

Figs

Recommendations for fertilizers for figs depend upon the nature of the soil and the size of the trees. On the heavy black prairie soil at Angleton, phosphoric acid gave a slight increase in yield, while nitrogen

and potash gave no appreciable increase in yield of figs. An application of 200 pounds per acre of superphosphate is suggested for such soils. Figs seem to do best on a soil containing lime.

For small trees on heavy black soil, 200 to 300 pounds to the acre of 4-10-0 or 4-10-2 is suggested. As the trees grow larger, the quantity of fertilizer may be increased to 600 to 1000 pounds or even more to the acre. These soils contain a good amount of potash, but figs have such a high value to the acre that it is well to use some potash when the trees come into bearing. It would then be well to use 6-9-3, 4-8-4, or 6-12-6 fertilizer.

The fertilizer should be applied in the spring after danger of frost is past, and harrowed in. Weeds should be kept down, especially around young trees. Otherwise, the fertilizer may help weeds to grow and thereby hold back the trees.

Onions

The use of 600 to 800 pounds of 6-12-6, 6-9-3, or 6-10-7 is suggested, supplemented with one to three dressings of 100 pounds of nitrate of soda or sulphate of ammonia at intervals of ten to fifteen days after the plants have begun to make rapid growth in the spring.

Peach or plum trees

Loam soils with clay or sandy clay subsoils, such as Orangeburg, Susquehanna, or similar types: Use 200 to 600 pounds per acre of 4-10-0 or 4-10-2. When the trees are bearing, use, in addition, 200 pounds or more of 6-9-3, 4-8-4, or 6-12-6, increasing the quantity as the trees grow older.

Deep sandy soil, such as Norfolk sand: Use 200 to 600 pounds of 4-12-4 or 4-8-4.

On clay soils, bottom lands, use 200 to 600 pounds of 4-10-0 or 6-9-3.

Potatoes, sweet

Loam or sandy loam soils with clay or sandy loam subsoils: 300 to 600 pounds of 4-12-4, 4-8-4, or 6-12-6 may be used. Deep sandy soil: Use 200 to 500 pounds 4-8-4, 6-12-6 or 4-8-6. Excess of nitrogen will produce excessive growth of vine and deficiency of tubers.

Potatoes, Irish

On loam or sandy soils, 300 to 800 pounds of 4-8-4 or 4-12-4 or 4-8-6 is suggested. In East Texas 500 to 800 of 4-8-4 or 6-9-3 may be used.

Rice

Experiments conducted at the Beaumont Substation from 1915 to 1928 show that 100 pounds to the acre of sulphate of ammonia made the largest increase in yield and has been the most profitable treatment used (Bulletin 398). The sulphate of ammonia should be applied at the time of planting, or not later than six weeks after planting the

rice. Superphosphate, and phosphate and potash gave profitable returns also, though not so great as the sulphate of ammonia.

Strawberries

An application of 300 to 500 pounds of 4-8-4, 6-12-6, or 4-12-4 (5-15-5, 6-18-6) may be made at the time of setting out the plants. In the spring, following the setting of the plants, an early application of the same fertilizer should be used in about the same quantity, put as near the row as convenient, and worked into the soil lightly. Some growers prefer to apply all the fertilizer early in the fall.

Tomatoes

Loam soils with clay or sandy clay subsoils, such as Susquehanna, or Orangeburg: If 300 to 500 pounds are used, use 4-8-6 or 4-8-4; if 500 to 1000 pounds, use 4-8-6, 4-8-4, 4-10-2 or 6-9-3. Less than 500 pounds of fertilizer may be supplemented by 100 to 200 pounds of nitrate of soda if there is no tendency to excessive growth of vine.

Deep sandy soil, such as Norfolk sand: If 200 to 500 pounds are used, use 4-8-6 or 4-8-4; if 500 to 1000 pounds are used, use 4-8-6. Less than 500 pounds of fertilizer may be supplemented by 100 to 200 pounds of nitrate of soda if there is no tendency to excessive growth of vine.

Land which produces an excessive vine: Use 200 to 400 pounds of superphosphate, 18 per cent or 20 per cent. It is also important to prune the vines, and on good land, good tomatoes can often be secured without fertilizer. Suckers should be removed every week, beginning a week after the plants are set out and continuing until a week after the top is pinched off. The top is pinched off as soon as the third cluster is formed. Another method of pruning is to allow the first sucker to come out to form a fork and prune off all others. The top of the main stalk is pinched off immediately after the third cluster of fruit is formed, and the sucker is pinched off immediately after the second cluster is formed on it. According to New Hampshire Bulletin 28, excess of potash delays maturity of tomatoes, and phosphoric acid hastens maturity.

Fertilizer for home gardens

The tendency with home gardens is to apply quantities of manure, without sufficient applications of phosphoric acid or potash. This results in an unbalanced condition of the plant food in the soil. The best fertilizer to apply under such conditions would be 200 to 400 pounds of superphosphate alone, or 0-15-6 fertilizer. Where applications of manure have been made only in moderate amounts, 300 to 600 pounds of 4-12-4, 5-15-5, 6-18-6 would probably be excellent. If lighter applications of manure are made, or none at all, 400 to 800 pounds of 4-8-4 or 4-8-6 would be suggested, and top dressings with nitrate of soda or sulphate of ammonia might also be tried.

Summary

The order of terms to designate fertilizer has been changed from phosphoric acid first, nitrogen second, potash third, to nitrogen first, phosphoric acid second, potash third, for the purpose of securing national and international uniformity.

This Bulletin contains a report of the Texas Fertilizer Control for 1928-29 and information regarding the use of fertilizer.

Sales of fertilizer in Texas were 187,215 tons in 1928-29. In 1927-28, sales were 139,126 tons. This does not include cottonseed meal sold as a feed but used as a fertilizer, which is estimated to be 12,000 tons in 1928-29.

The average selling prices and composition of the different kinds of fertilizer are given.

Available phosphoric acid costs less in 20 per cent superphosphate than in 18 per cent or 16 per cent. Kainit is a very expensive source of potash, muriate of potash being much cheaper. Nitrogen costs much less in sulphate of ammonia than nitrate of soda. Cottonseed meal is a very expensive fertilizer. Plant food costs less per pound in the more concentrated fertilizers than in less concentrated fertilizers, though the former costs more per ton. A pound of plant food cost most in the 9-3-0 fertilizer; the 10-2-2 came next, and the 8-3-3 came third.

The use of sulphur or gypsum as a fertilizer is not recommended for Texas.

Greensand marl does not contain enough plant food to be sold as a fertilizer, though some of it could be used locally if it could be mined and applied at a low cost.

The grades of fertilizer to be sold next season are given. The four grades of fertilizer furnishing plant food at the highest cost per pound were discontinued, as was 16 per cent superphosphate, which was a more expensive source of phosphoric acid than 18 per cent or 20 per cent superphosphate.

Information is given regarding fertilizers, and suggestions are made for the fertilization of various crops in Texas.

An explanation of terms is given.

A table is given showing the relation of the guaranteed valuation to the valuation delivered by the various manufacturers.

A table is given containing analyses of samples of fertilizers collected by inspectors.

Statistics were collected to find the average percentages of the different crops fertilized in some of the counties using fertilizer and the quantity of fertilizer applied to an acre.

Table 10.—Analysis on commercial fertilizer, season 1928-29.

Laboratory number	Manufacturer, place of business and brand	Nitrogen—per cent	Phosphoric acid—available per cent	Potash—per cent	Valuation—per ton
	American Fertilizer and Chemical Works, Georgetown, Texas—				
	Bluebonnet High Grade 8-4-4—Guarantee	4.00	8.00	4.00	$32.40
34038	Analysis	4.16	8.16	**3.88**	33.17
	Bluebonnet High Grade 10-3-3—Guarantee	3.00	10.00	3.00	29.10
34036	Analysis	3.03	**8.58**	3.05	**27.60**
	Bluebonnet High Grade 12-4-4—Guarantee	4.00	12.00	4.00	37.20
34039	Analysis	4.16	**10.54**	**3.50**	**35.57**
	Arkansas Fertilizer Company, Little Rock, Arkansas—				
	White Diamond 9-6-3—Guarantee	6.00	9.00	3.00	41.40
34764	Analysis	**5.49**	9.47	**2.92**	**39.57**
	White Diamond 15-5-5—Guarantee	5.00	15.00	5.00	46.50
34921	Analysis	**4.94**	15.35	5.01	46.66
34996	Analysis	5.02	**14.12**	5.05	**45.59**
	White Diamond Blood & Bone—Guarantee	2.00	10.00	2.00	23.40
34540	Analysis	2.03	10.45	2.15	24.26
34804	Analysis	2.12	10.29	2.25	24.59
	White Diamond Crop Getter—Guarantee	4.00	12.00	4.00	37.20
34541	Analysis	**3.76**	**9.87**	4.34	**33.97**
34743	Analysis	**3.89**	12.60	4.66	38.22
34784	Analysis	4.44	**11.56**	4.25	38.95
34798	Analysis	4.16	12.25	4.66	39.01
34809	Analysis	4.00	12.27	4.37	37.96
34866	Analysis	**3.91**	12.72	**3.60**	**37.18**
34922	Analysis	4.10	**11.77**	**3.83**	**37.17**
34978	Analysis	**3.94**	**10.83**	4.07	**35.61**
34979	Analysis	**3.87**	**11.87**	4.11	**36.59**
34980	Analysis	4.12	**11.95**	4.30	38.04
34991	Analysis	4.24	**11.19**	4.04	37.36
	White Diamond Early Boll—Guarantee	3.00	10.00	3.00	29.10
34750	Analysis	3.01	10.08	3.56	29.92
34782	Analysis	3.06	10.46	3.21	30.17
34803	Analysis	3.02	10.67	3.21	30.24
34867	Analysis	3.31	**9.32**	**2.93**	29.60
34923	Analysis	3.11	**9.65**	3.38	29.64
34973	Analysis	**2.97**	10.08	3.03	29.11
34977	Analysis	**2.94**	10.09	3.02	**28.96**
34983	Analysis	3.02	10.23	3.31	30.65
34984	Analysis	3.35	10.99	3.93	32.99
34985	Analysis	**2.83**	10.17	3.13	**28.70**
34986	Analysis	3.11	10.31	3.04	30.02
34987	Analysis	3.14	10.32	3.09	30.22
34988	Analysis	3.10	10.07	3.29	29.98
34989	Analysis	**2.83**	10.34	**2.53**	**28.19**
34990	Analysis	3.01	**9.31**	3.14	**28.49**
34993	Analysis	3.04	**9.31**	3.02	**28.47**
	White Diamond Jack Rabbit—Guarantee	4.00	8.00	6.00	34.80
34913	Analysis	**3.90**	**7.68**	**5.36**	**33.20**
	White Diamond Old Reliable—Guarantee	4.00	8.00	4.00	32.40
34766	Analysis	4.09	8.49	4.77	34.32
34783	Analysis	**3.72**	10.89	4.07	34.69
34808	Analysis	4.02	8.38	4.40	33.43
	White Diamond 20% Superphosphate—Guarantee	.....	20.00	.....	24.00
34920	Analysis	.....	**19.28**	.....	**23.14**
	Armour Fertilizer Works, Houston, Fort Worth, Texas, and New Orleans, Louisiana—				
	Armour's Big Crop Fertilizer No. 833—Guarantee	3.00	8.00	3.00	26.70
34159	Analysis	3.17	8.27	3.31	28.16
34591	Analysis	3.19	8.61	3.37	28.73
34607	Analysis	**2.90**	8.32	3.06	26.70
	Armour's Big Crop Fertilizer No. 844—Guarantee	4.00	8.00	4.00	32.40
34043	Analysis	**3.70**	8.88	**3.17**	**31.11**
34077	Analysis	**3.88**	8.62	**3.65**	**32.18**

Table 10.—Analysis on commercial fertilizer, season 1928-29—(continued)

Laboratory number	Manufacturer, place of business and brand	Nitrogen—per cent	Phosphoric acid—available per cent	Potash—per cent	Valuation—per ton
	Armour Fertilizer Works, Houston, Fort Wortn, Texas, and New Orleans, Louisiana—Continued.				
	Armour's Big Crop Fertilizer No. 844—Guarantee—Continued	4.00	8.00	4.00	$32.40
34082	Analysis	**3.97**	8.31	4.07	32.73
34144	Analysis	**3.78**	8.44	**3.80**	**31.70**
34325	Analysis	**3.82**	8.59	**3.58**	**31.80**
34507	Analysis	**3.76**	8.56	4.12	**32.13**
34857	Analysis	4.14	8.43	**3.74**	33.24
34897	Analysis	**3.68**	8.53	**3.00**	**30.40**
34907	Analysis	4.33	8.07	**3.77**	33.69
34972	Analysis	4.21	8.40	**3.74**	33.52
35010	Analysis	4.20	8.31	4.01	33.68
35060	Analysis	4.04	**7.74**	**3.60**	**31.79**
	Armour's Big Crop Fertilizer No. 846—Guarantee	4.00	8.00	6.00	34.80
34151	Analysis	**3.76**	8.30	**5.65**	**33.66**
35034	Analysis	**3.82**	8.21	6.48	34.82
35037	Analysis	**3.83**	8.14	**5.13**	**33.17**
	Armour's Big Crop Fertilizer No. 930—Guarantee	3.00	9.00	.....	24.30
34142	Analysis	3.14	9.21	.....	25.18
	Armour's Big Crop Fertilizer No. 963—Guarantee	6.00	9.00	3.00	41.40
34229	Analysis	6.04	10.10	3.93	44.02
34232	Analysis	**5.93**	9.32	3.05	41.53
34327	Analysis	**5.16**	**8.70**	**2.56**	**36.73**
	Armour's Big Crop Fertilizer No. 1022—Guarantee	2.00	10.00	2.00	23.40
34204	Analysis	2.21	10.01	2.10	24.48
34355	Analysis	2.10	10.64	2.09	24.73
34508	Analysis	2.44	10.60	2.53	26.74
	Armour's Big Crop Fertilizer No. 1033—Guarantee	3.00	10.00	3.00	29.10
34203	Analysis	**2.87**	10.15	**2.76**	**28.41**
34233	Analysis	**2.77**	10.11	**2.87**	**28.04**
34267	Analysis	**2.87**	10.21	**2.92**	**28.67**
34278	Analysis	**2.77**	10.19	**2.70**	**27.94**
34329	Analysis	**2.87**	10.15	**2.84**	**28.51**
34423	Analysis	3.05	10.46	3.02	29.90
34448	Analysis	**2.78**	10.17	3.16	**28.50**
34546	Analysis	**2.91**	**9.81**	**2.48**	**27.94**
34595	Analysis	3.04	10.21	**2.69**	29.16
34616	Analysis	**2.93**	10.56	**2.69**	**29.09**
34628	Analysis	**2.80**	10.12	**2.95**	**28.28**
34679	Analysis	**2.83**	10.10	**2.58**	**27.96**
34690	Analysis	**2.77**	10.77	**2.62**	**28.53**
34787	Analysis	**2.81**	10.27	**2.72**	**28.23**
34814	Analysis	**2.84**	10.34	**2.57**	**28.27**
34821	Analysis	3.00	10.56	**2.88**	29.63
34844	Analysis	3.12	10.18	3.01	29.87
34886	Analysis	3.24	10.28	3.00	30.52
34919	Analysis	3.43	10.34	3.01	31.46
34925	Analysis	3.69	10.36	3.02	32.66
34971	Analysis	3.12	10.05	**2.81**	29.47
35031	Analysis	3.41	10.92	**2.51**	31.46
35057	Analysis	3.49	10.18	3.02	31.55
35066	Analysis	3.41	**9.56**	3.20	30.66
	Armour's Big Crop Fertilizer No. 1038—Guarantee	3.00	10.00	8.00	35.10
34040	Analysis	3.02	10.57	**7.35**	**35.09**
34041	Analysis	3.17	10.70	**7.19**	35.74
34046	Analysis	3.34	11.26	**6.67**	36.54
34052	Analysis	3.29	10.16	**7.45**	35.94
34596	Analysis	**2.75**	**9.91**	**7.58**	**33.37**
34885	Analysis	3.46	10.32	**6.35**	35.57
	Armour's Big Crop Fertilizer No. 1042—Guarantee	4.00	10.00	2.00	32.40
34328	Analysis	**3.64**	10.20	2.26	**31.33**
34404	Analysis	**3.83**	10.20	2.20	**32.12**

Table 10.—Analysis on commercial fertilizer, season 1928-29—(continued)

Laboratory number	Manufacturer, place of business and brand	Nitrogen—per cent	Phosphoric acid—available per cent	Potash—per cent	Valuation—per ton
	Armour Fertilizer Works, Houston, Fort Worth, Texas, and New Orleans, Louisiana—Continued.				
	Armour's Big Crop Fertilizer No. 1067—Guarantee	6.00	10.00	7.00	$47.40
34053	Analysis	**5.79**	10.27	**6.83**	**46.5**
34063	Analysis	**5.84**	10.37	7.10	**47.2**
34088	Analysis	**5.49**	10.10	**6.37**	**44.4**
34447	Analysis	**5.23**	11.04	7.15	**45.3**
34593	Analysis	6.23	10.21	**6.69**	48.3
34880	Analysis	6.18	10.57	**6.83**	48.6
	Armour's Big Crop Fertilizer No. 1244—Guarantee	4.00	12.00	4.00	37.2
34124	Analysis	4.02	12.17	4.01	37.5
34132	Analysis	**3.88**	12.16	**3.75**	**36.5**
34141	Analysis	**3.98**	12.66	4.25	38.2
34178	Analysis	**3.70**	12.04	4.05	**35.9**
34205	Analysis	**3.98**	12.19	**3.88**	37.2
34228	Analysis	**3.72**	12.13	**3.85**	**35.9**
34230	Analysis	4.10	12.15	4.11	37.9
34231	Analysis	**3.81**	12.12	4.01	**36.5**
34255	Analysis	**3.69**	12.16	**3.89**	**35.8**
34273	Analysis	**3.86**	12.15	**3.81**	**36.5**
34394	Analysis	**3.90**	12.46	**3.77**	**37.0**
34413	Analysis	**3.91**	12.13	4.16	**37.1**
34446	Analysis	**3.81**	12.25	**3.70**	**36.2**
34506	Analysis	**3.89**	12.06	4.16	**36.9**
34525	Analysis	4.11	12.38	**3.96**	38.1
34547	Analysis	**3.85**	12.11	4.02	**36.6**
34590	Analysis	4.08	12.12	4.14	37.8
34613	Analysis	**3.92**	12.41	**3.92**	37.2
34689	Analysis	4.02	12.58	**3.84**	37.8
34768	Analysis	4.06	12.37	4.06	37.9
34819	Analysis	4.08	12.96	**3.88**	**38.5**
34856	Analysis	4.13	12.38	4.03	38.2
34912	Analysis	4.14	12.07	4.28	38.2
34927	Analysis	4.10	**11.67**	4.06	37.3
34941	Analysis	4.02	12.18	**3.86**	37.3
34961	Analysis	4.21	**10.72**	4.15	**36.7**
35012	Analysis	**3.97**	12.49	4.14	37.8
35024	Analysis	4.02	12.38	**3.83**	37.5
35059	Analysis	**3.90**	12.24	4.04	**37.0**
35067	Analysis	4.22	**11.27**	4.01	37.3
	Armour's Big Crop Fertilizer No. 1266—Guarantee	6.00	12.00	6.00	48.6
34011	Analysis	**5.83**	12.36	6.02	**48.2**
34014	Analysis	6.04	12.70	6.06	49.6
34015	Analysis	6.04	12.51	6.02	49.4
34020	Analysis	**5.71**	12.55	6.06	**48.0**
34031	Analysis	**5.47**	12.04	**5.52**	**45.6**
34033	Analysis	**5.98**	12.76	6.18	49.6
34075	Analysis	**5.76**	12.42	6.20	**48.2**
34083	Analysis	**5.81**	12.23	**5.90**	**47.9**
34135	Analysis	**5.92**	12.39	6.06	48.7
34148	Analysis	**5.44**	12.00	**5.73**	**45.7**
34160	Analysis	**5.79**	12.28	6.08	**48.1**
34324	Analysis	**5.90**	12.57	**5.77**	**48.5**
34622	Analysis	**5.85**	12.46	6.06	**48.5**
35013	Analysis	**5.67**	12.55	**5.71**	**47.4**
35032	Analysis	**5.79**	12.90	**5.58**	**48.2**
	Armour's Big Crop Fertilizer No. 1555—Guarantee	5.00	15.00	5.00	46.5
34010	Analysis	**4.94**	15.49	5.24	**47.1**
34012	Analysis	5.05	15.44	5.22	47.5
34025	Analysis	5.04	**14.69**	5.32	46.6
34026	Analysis	**4.94**	15.21	**4.93**	**46.4**
34028	Analysis	5.16	15.16	5.26	47.7
34047	Analysis	**4.93**	**14.79**	**4.86**	**45.7**
34051	Analysis	**4.95**	15.11	5.07	**46.4**
34062	Analysis	5.06	15.05	5.04	46.8

Table 10.—Analysis on commercial fertilizer, season 1928-29—(continued)

Laboratory number	Manufacturer, place of business and brand	Nitrogen—per cent	Phosphoric acid—available per cent	Potash—per cent	Valuation—per ton
	Armour's Fertilizer Works, Houston, Fort Worth, Texas, and New Orleans, Louisiana—Continued.				
	Armour's Big Crop Fertilizer No. 1555—Guarantee—Continued.				
34067	Analysis	5.04	15.37	5.00	$47.12
34087	Analysis	**4.83**	15.24	5.17	**46.23**
34234	Analysis	5.09	15.40	5.41	47.88
34272	Analysis	5.00	15.23	5.13	46.94
34275	Analysis	**4.86**	15.35	**4.90**	**46.17**
34277	Analysis	**4.97**	15.39	5.23	47.12
34393	Analysis	5.07	15.01	**4.68**	**46.45**
34403	Analysis	5.03	15.04	5.31	47.06
34424	Analysis	**4.94**	15.88	5.42	47.79
34449	Analysis	**4.96**	**14.77**	5.02	**46.06**
34463	Analysis	**4.80**	15.52	5.06	**46.29**
34469	Analysis	5.01	**14.59**	5.03	**46.10**
34526	Analysis	5.03	15.05	**4.93**	46.62
34594	Analysis	5.01	**14.80**	5.04	**46.36**
34612	Analysis	5.11	**14.80**	5.01	46.77
34614	Analysis	**4.96**	15.14	**4.92**	**46.39**
34615	Analysis	5.02	15.23	5.11	47.00
34621	Analysis	4.82	15.06	5.13	**45.92**
34688	Analysis	5.07	15.29	**4.48**	46.55
34740	Analysis	**4.93**	15.29	**4.96**	**46.49**
34820	Analysis	**4.99**	15.12	**4.84**	**46.41**
34881	Analysis	5.04	15.57	5.10	47.48
34884	Analysis	5.14	15.32	5.01	47.52
34898	Analysis	5.23	15.75	**4.72**	48.10
34924	Analysis	5.06	15.51	**4.73**	47.06
34926	Analysis	5.07	**14.70**	5.14	46.63
34960	Analysis	5.02	**14.68**	**4.79**	**45.96**
34970	Analysis	**4.91**	**14.76**	**4.70**	**45.45**
34981	Analysis	**4.78**	**14.57**	5.06	**45.06**
34982	Analysis	**4.84**	**14.69**	5.12	**45.55**
35038	Analysis	5.02	**14.91**	5.09	**46.59**
34046	Analysis	**4.60**	**14.21**	**4.80**	**43.51**
	Armour's Big Crop Fertilizer No. 1866—Guarantee	6.00	18.00	6.00	55.80
34133	Analysis	**5.70**	18.15	6.24	**54.92**
34179	Analysis	6.02	18.00	**5.61**	**55.42**
34227	Analysis	6.04	18.19	6.77	57.13
	Armour's Big Crop Muriate of Potash—Guarantee	.....	.....	50.00	60.00
34323	Analysis	.....	.....	**42.63**	**51.16**
34532	Analysis	.....	.....	**49.85**	**59.82**
34672	Analysis	.....	.....	**49.50**	**59.40**
	Armour's Big Crop Raw Bone Meal—Guarantee	3.70	*22.00	.....	34.25
34330	Analysis	3.94	22.68	.....	35.87
	Armour's Kainit—Guarantee	.....	.....	12.00	14.40
34598	Analysis	.....	.....	14.24	17.09
34627	Analysis	.....	.....	30.36	36.43
	Armour's Nitrate of Soda—Guarantee	15.00	.....	.....	67.50
34123	Analysis	15.60	.....	.....	70.20
34269	Analysis	15.70	.....	.....	70.65
34648	Analysis	15.18	.....	.....	68.31
	Armour's Big Crop Phosphate and Potash No. 1506—Guarantee	.....	15.00	6.00	25.20
34068	Analysis	.....	15.24	6.12	25.63
35045	Analysis	.....	**12.73**	**5.38**	**21.74**
	Armour's Big Crop 16% Superphosphate—Guarantee	.....	16.00	.....	19.20
34592	Analysis	.....	17.11	.....	20.53
	Armour's Big Crop 18% Superphosphate—Guarantee	.....	18.00	.....	21.60
34256	Analysis	.....	19.96	.....	23.95
34392	Analysis	.....	20.62	.....	24.74
34425	Analysis	.....	19.93	.....	23.92

Table 10.—Analysis on commercial fertilizer, season 1928-29—(continued)

Laboratory number	Manufacturer, place of business and brand	Nitrogen—per cent	Phosphoric acid—available per cent	Potash—per cent	Valuation—per ton
	Armour's Fertilizer Works, Houston, Fort Worth, Texas, and New Orleans, Louisiana—Continued.				
	Armour's Big Crop 20% Superphosphate—Guarantee	.....	20.00	.....	$24.00
34048	Analysis	.....	20.95	.....	25.14
34055	Analysis	.....	20.55	.....	24.66
34064	Analysis	.....	20.90	.....	25.08
34274	Analysis	.....	20.53	.....	24.64
34279	Analysis	.....	21.20	.....	25.44
34395	Analysis	.....	20.26	.....	24.31
34405	Analysis	.....	21.47	.....	25.76
34626	Analysis	.....	**19.44**	.....	**23.33**
34918	Analysis	.....	20.63	.....	24.76
34500	Analysis	.....	20.55	.....	24.66
	N. P. K.—Guarantee	9.00	27.00	9.00	83.70
34597	Analysis	9.03	**26.00**	9.12	**82.78**
35001	Analysis	9.24	27.10	9.12	85.04
	George L. Barber & Son, Jacksonville, Texas.—				
	Barber's Nitrate of Soda—Guarantee	15.00	.....	.....	67.50
34646	Analysis	15.38	.....	.....	69.21
	The Barrett Company, 40 Rector St., New York, N. Y.—				
	Arcadian Nitrate of Soda—Guarantee	16.25	.....	.....	73.13
35025	Analysis	16.53	.....	.....	74.39
	Arcadian Sulphate of Ammonia—Guarantee	20.75	.....	.....	93.40
34401	Analysis	20.99	.....	.....	94.46
34728	Analysis	20.97	.....	.....	94.37
	Bryan Cotton Oil and Fertilizer Company, Bryan, Texas—				
	Star Brand Cotton and Corn Fertilizer—Guarantee	2.00	10.00	2.00	23.40
34210	Analysis	2.02	**9.84**	2.08	23.40
34291	Analysis	**1.95**	10.82	2.42	24.66
34534	Analysis	2.57	10.55	2.01	26.64
	Star Brand Special Fertilizer—Guarantee	3.00	10.00	3.00	29.10
34212	Analysis	3.21	11.95	**2.71**	32.04
34293	Analysis	3.29	11.99	3.12	32.94
34533	Analysis	**2.93**	12.26	3.56	32.17
	Star Brand Superphosphate—Guarantee	.....	18.00	.....	21.60
34211	Analysis	.....	19.30	.....	23.16
34292	Analysis	.....	19.23	.....	23.08
34535	Analysis	.....	20.52	.....	24.62
	Davidson-Pick Fertilizers, Inc., New Orleans, La.—				
	Bull Dog Special No. 833—Guarantee	3.00	8.00	3.00	26.70
34586	Analysis	**2.97**	8.86	**2.56**	27.07
	Bull Dog Special No. 844—Guarantee	4.00	8.00	4.00	32.40
34494	Analysis	**2.82**	8.41	4.23	**27.86**
34585	Analysis	**3.08**	8.92	4.63	**30.12**
34587	Analysis	**3.35**	9.05	4.39	**31.21**
34810	Analysis	**3.94**	8.19	**3.52**	34.18
34962	Analysis	4.01	8.16	**3.04**	**32.21**
	Bull Dog Special No. 846—Guarantee	4.00	8.00	6.00	34.80
34376	Analysis	4.04	8.84	**5.29**	35.14
34504	Analysis	**3.03**	9.06	6.58	**32.41**
34574	Analysis	**2.57**	9.67	**5.92**	**30.27**
	Bull Dog Special No. 1022—Guarantee	2.00	10.00	2.00	23.40
34342	Analysis	2.24	**9.79**	2.07	24.31
34558	Analysis	2.24	10.69	2.12	25.45
34575	Analysis	2.44	14.97	2.18	31.56
	Bull Dog Special No. 1033—Guarantee	3.00	10.00	3.00	29.10
34341	Analysis	**2.64**	10.24	**2.48**	**27.15**
34377	Analysis	**2.47**	10.14	**2.25**	**25.99**
34811	Analysis	3.50	**8.25**	3.63	29.64
	Bull Dog Special No. 1038—Guarantee	3.00	10.00	8.00	35.10
34397	Analysis	**2.71**	10.58	**7.52**	**33.92**

Table 10.—Analysis on commercial fertilizer, season 1928-29—(continued)

Laboratory number	Manufacturer, place of business and brand	Nitrogen—per cent	Phosphoric acid—available per cent	Potash—per cent	Valuation—per ton
	Davidson-Pick Fertilizers, Inc, New Orleans La.—Continued.				
	Bull Dog Special No. 1244—Guarantee	4.00	12.00	4.00	$37.20
333	Analysis	**3.37**	12.85	4.35	**35.81**
431	Analysis	**3.58**	12.13	5.15	**36.85**
473	Analysis	4.15	12.24	4.20	38.41
475	Analysis	**3.49**	12.75	**3.69**	**35.44**
495	Analysis	**3.64**	12.66	4.44	**36.90**
516	Analysis	**3.68**	12.65	**3.51**	**35.95**
557	Analysis	4.06	12.81	4.01	38.45
583	Analysis	4.04	**11.57**	4.30	37.22
	Bull Dog Special No. 1266—Guarantee	6.00	12.00	6.00	48.60
470	Analysis	**5.91**	12.95	6.07	49.42
582	Analysis	**5.32**	13.15	6.08	**47.02**
	Bull Dog Special No. 1555—Guarantee	5.00	15.00	5.00	46.50
430	Analysis	6.30	**9.50**	5.52	**46.37**
	Bull Dog Special No. 1866—Guarantee	6.00	18.00	6.00	55.80
513	Analysis	**5.60**	18.17	6.58	**54.90**
	Bull Dog Superphosphate No. 16—Guarantee	.....	16.00	.....	19.20
390	Analysis	.....	17.55	.....	21.06
	Bull Dog Superphosphate No. 18—Guarantee	.....	18.00	.....	21.60
391	Analysis	.....	19.65	.....	23.58
584	Analysis	.....	19.43	.....	23.32
	Bull Dog Superphosphate No. 20—Guarantee	.....	20.00	.....	24.00
312	Analysis	.....	22.65	.....	27.18
396	Analysis	.....	21.08	.....	25.30
	Kainit No. 14—Guarantee	.....	.....	14.00	16.80
474	Analysis	.....	.....	14.28	17.14
	Nitrate of Soda—Guarantee	15.00	.....	.....	67.50
432	Analysis	15.24	.....	.....	68.58
	East Texas Cotton Oil Company, Wills Point, Texas—				
	Etco Cotton Grower—Guarantee	4.00	12.00	4.00	37.20
693	Analysis	4.68	12.84	4.27	41.59
702	Analysis	4.58	13.08	4.22	41.37
035	Analysis	4.23	12.24	4.07	38.61
	Etco Cotton Seed Meal Mixture—Guarantee	2.00	10.00	2.00	23.40
694	Analysis	**1.86**	**8.97**	6.50	26.93
036	Analysis	2.17	**9.65**	2.07	23.83
	Etco Potato Producer—Guarantee	4.00	8.00	4.00	32.40
685	Analysis	**3.54**	8.52	4.79	**31.90**
	Etco Special Truck—Guarantee	3.00	10.00	3.00	35.10
965	Analysis	3.10	10.88	7.64	36.18
	Etco 18% Superphosphate—Guarantee	.....	18.00	.....	21.60
696	Analysis	.....	19.07	.....	22.88
	Farmers Cotton Oil Company, Winnsboro, Texas—				
	Farmers Fertilizer No. 844—Guarantee	4.00	8.00	4.00	32.40
434	Analysis	**3.87**	11.02	4.64	36.21
780	Analysis	4.73	8.00	4.28	36.03
062	Analysis	**3.79**	8.56	**3.88**	**31.99**
	Farmers Fertilizer No. 846—Guarantee	4.00	8.00	6.00	34.80
433	Analysis	4.02	9.74	6.40	37.46
	Farmers Fertilizer No. 1033—Guarantee	3.00	10.00	3.00	29.10
436	Analysis	**2.93**	10.93	4.21	31.36
781	Analysis	3.25	10.47	3.14	30.96
	Farmers Fertilizer No. 1042—Guarantee	4.00	10.00	2.00	32.40
435	Analysis	4.01	10.55	3.02	34.33
	Farmers Fertilizer No. 1244—Guarantee	4.00	12.00	4.00	37.20
779	Analysis	4.17	12.10	4.14	38.26
063	Analysis	4.06	**11.55**	3.90	**36.81**

Table 10.—Analysis on commercial fertilizer, season 1928-29—(continued)

Laboratory number	Manufacturer, place of business and brand	Nitrogen—per cent	Phosphoric acid—available per cent	Potash—per cent	Valuation—per ton
	Fidelity Chemical Corporation, Houston, Texas—				
	Fidelity 8-4-4 Fertilizer—Guarantee	4.00	8.00	4.00	$32.40
34091	Analysis	4.52	8.98	**3.32**	35.10
34220	Analysis	**3.81**	8.09	5.68	33.68
34264	Analysis	4.04	8.02	5.27	34.12
34387	Analysis	4.10	8.82	4.46	34.38
34518	Analysis	**3.87**	**7.40**	5.10	32.42
34602	Analysis	4.20	8.20	4.46	34.09
	Fidelity 8-4-6 Fertilizer—Guarantee	4.00	8.00	6.00	34.80
34089	Analysis	4.18	8.44	6.40	36.62
34258	Analysis	4.21	8.66	**5.57**	36.02
34306	Analysis	**3.84**	8.23	**4.39**	**32.43**
34388	Analysis	4.30	9.32	**4.95**	36.47
34603	Analysis	4.59	8.08	6.22	37.82
34258	Analysis	4.21	8.66	**5.57**	36.02
34306	Analysis	**3.84**	8.23	**4.39**	**32.43**
34388	Analysis	4.30	9.32	**4.95**	36.47
34603	Analysis	4.59	8.08	6.22	37.82
	Fidelity 9-3-0 Fertilizer—Guarantee	3.00	9.00	.....	24.30
34059	Analysis	4.16	11.31	.....	33.29
	Fidelity 9-6-3 Fertilizer—Guarantee	6.00	9.00	3.00	41.40
34218	Analysis	6.07	**8.89**	3.38	42.05
	Fidelity 10-2-2 Fertilizer—Guarantee	2.00	10.00	2.00	23.40
34092	Analysis	2.15	**9.47**	2.28	23.78
34190	Analysis	2.20	**9.83**	2.42	24.60
34209	Analysis	2.16	10.13	2.14	24.45
34242	Analysis	2.10	**9.77**	2.38	24.03
34549	Analysis	2.13	**9.49**	2.31	23.75
	Fidelity 10-3-3 Fertilizer—Guarantee	3.00	10.00	3.00	29.10
34189	Analysis	3.46	10.07	3.24	31.54
34208	Analysis	3.47	10.11	3.06	31.42
34283	Analysis	3.27	**9.89**	3.32	30.57
34386	Analysis	3.41	10.64	3.58	32.42
	Fidelity 10-3-8 Fertilizer—Guarantee	3.00	10.00	8.00	35.10
34057	Analysis	3.49	10.04	8.02	37.38
34385	Analysis	3.48	10.45	**7.50**	37.20
	Fidelity 10-4-2 Fertilizer	4.00	10.00	2.00	32.40
34221	Analysis	4.28	10.52	2.44	34.81
	Fidelity 10-4-7 Fertilizer	4.00	10.00	7.00	38.40
34074	Analysis	5.65	11.08	**6.14**	46.10
	Fidelity 10-6-7 Fertilizer—Guarantee	6.00	10.00	7.00	47.40
34070	Analysis	6.39	10.55	7.28	50.16
34090	Analysis	6.11	10.40	7.30	48.74
	Fidelity 12-4-4 Fertilizer—Guarantee	4.00	12.00	4.00	37.20
34207	Analysis	4.60	12.10	4.24	40.31
34219	Analysis	4.26	**10.91**	4.89	38.13
34241	Analysis	4.27	12.37	4.37	39.30
34266	Analysis	4.24	**10.85**	5.08	38.20
34282	Analysis	4.68	12.01	4.37	40.71
34305	Analysis	4.69	12.03	4.11	40.48
34331	Analysis	4.34	12.62	4.36	39.90
34389	Analysis	4.38	12.36	4.29	39.69
34483	Analysis	**3.88**	**11.87**	4.46	**37.05**
34522	Analysis	4.23	12.11	4.12	38.51
	Fidelity 15-0-6—Guarantee	.....	15.00	6.00	25.20
34058	Analysis	.....	**14.51**	6.60	25.33
	Fidelity 15-5-5 Fertilizer—Guarantee	5.00	15.00	5.00	46.50
34045	Analysis	**4.97**	15.04	5.33	46.82
34265	Analysis	**4.91**	15.28	5.47	47.00
34332	Analysis	5.14	15.25	5.28	47.77
34482	Analysis	**4.64**	15.07	5.21	**45.21**
	Fidelity 18-6-6 Fertilizer—Guarantee	6.00	18.00	6.00	55.80
34093	Analysis	**5.70**	**16.57**	7.44	**54.46**
	Fidelity Nitrate of Soda—Guarantee	15.00	.....	.....	67.50
34054	Analysis	15.76	.....	.....	70.92

Table 10.—Analysis on commercial fertilizer, season 1928-29—(continued)

Laboratory number	Manufacturer, place of business and brand	Nitrogen—per cent	Phosphoric acid—available per cent	Potash—per cent	Valuation—per ton
	Fidelity Chemical Corporation, Houston, Texas—Cont.				
	Fidelity 16% Superphosphate—Guarantee	.....	16.00	.....	$19.20
34868	Analysis	.....	18.03	.....	21.64
34869	Analysis	.....	17.22	.....	20.66
	Fidelity 18% Superphosphate—Guarantee	.....	18.00	.....	21.60
34290	Analysis	.....	18.08	.....	21.70
	Ford Motor Company, Fordson, Michigan—				
	Ford Ammonium Sulphate—Guarantee	20.00	.....	.....	93.60
34044	Analysis	20.83	.....	.....	93.74
34056	Analysis	20.93	.....	.....	94.18
	Gate City Fertilizer Company, Little Rock, Arkansas—				
	Red Ball 10-3-3—Guarantee	3.00	10.00	3.00	29.10
34490	Analysis	**2.61**	10.65	3.35	**28.55**
34863	Analysis	3.93	**9.80**	4.15	34.43
	Red Ball 12-4-4—Guarantee	4.00	12.00	4.00	37.20
34762	Analysis	4.16	**11.58**	4.37	37.86
34861	Analysis	4.10	12.17	4.10	37.97
	Red Ball Nitrate of Soda—Guarantee	15.00	.....	.....	67.50
34862	Analysis	**13.38**	.....	.....	**63.81**
	Red Ball 20% Superphosphate—Guarantee	.....	20.00	.....	24.00
34864	Analysis	.....	20.07	.....	24.08
	Gilmer Cotton Oil and Fertilizer Company, Gilmer, Texas—				
	G. C. O. & F. Co.'s Corn Grower—Guarantee	3.00	8.00	3.00	26.70
34428	Analysis	**2.24**	**6.56**	3.76	**22.46**
	G. C. O. & F. Co.'s Perfection Compound—Guarantee	4.00	12.00	4.00	37.20
34427	Analysis	**3.82**	13.25	4.11	38.03
	G. C. O. & F. Co.'s Potato Grower—Guarantee	4.00	8.00	4.00	32.40
34429	Analysis	**3.74**	8.70	4.34	32.48
	G. C. O. & F. Co.'s Special Blood & Bone—Guarantee	3.00	10.00	3.00	29.10
34426	Analysis	3.23	10.47	3.07	30.78
	G. C. O. & F. Co.'s Superior Meal Compound—Guarantee	3.00	10.00	3.00	29.10
34729	Analysis	3.32	**8.93**	3.05	29.32
35052	Analysis	3.04	11.22	**.99**	**28.33**
	Home Fertilizer Company, Inc., Texarkana, Texas—				
	Home Brand Superphosphate 18-0-0—Guarantee	18.00	.....	.....	21.60
34877	Analysis	18.42	.....	.....	22.10
34892	Analysis	18.91	.....	.....	22.69
	Owl Brand 8-4-4—Guarantee	4.00	8.00	4.00	32.40
34763	Analysis	**3.89**	**6.05**	4.13	**29.73**
	Owl Brand 8-4-6—Guarantee	4.00	8.00	6.00	34.80
34936	Analysis	4.27	**7.66**	6.64	36.38
	Owl Brand 10-3-3—Guarantee	3.00	10.00	3.00	29.10
34734	Analysis	3.15	**9.90**	**2.88**	29.52
34736	Analysis	3.09	**9.04**	**2.84**	**28.17**
34742	Analysis	3.03	10.33	3.24	29.93
34875	Analysis	3.10	**9.17**	3.16	**28.74**
34891	Analysis	**2.60**	**7.43**	**2.64**	**23.79**
34914	Analysis	3.11	**5.36**	3.01	**24.04**
34929	Analysis	3.94	**7.98**	3.00	30.91
	Home Brand 10-4-2—Guarantee	4.00	10.00	2.00	32.40
34935	Analysis	4.18	**9.00**	2.43	32.53
	Owl Brand 12-4-4—Guarantee	4.00	12.00	4.00	37.20
34739	Analysis	4.04	12.87	**3.80**	38.18
34748	Analysis	4.18	12.88	4.83	40.07
34749	Analysis	4.19	12.87	4.36	39.53
34753	Analysis	4.12	12.96	**3.71**	38.54
34876	Analysis	**3.19**	**11.50**	**3.74**	**32.65**
34887	Analysis	**3.63**	**10.66**	**3.21**	**32.98**
34890	Analysis	**3.18**	**11.31**	4.12	**32.82**
34930	Analysis	4.34	**11.81**	4.14	38.67
34937	Analysis	4.74	**10.43**	**3.90**	38.53
	Owl Brand 15-5-5—Guarantee	5.00	15.00	5.00	46.50
34931	Analysis	**3.66**	**12.66**	**4.92**	**37.56**
34995	Analysis	**3.89**	**12.70**	5.06	**38.82**

Table 10.—Analysis on commercial fertilizer, season 1928-29—(continued)

Laboratory number	Manufacturer, place of business and brand	Nitrogen—per cent	Phosphoric acid—available per cent	Potash—per cent	Valuation—per ton
	Hope Fertilizer Company, Hope, Arkansas—				
	Stork Brand Eight-Four Four—Guarantee	4.00	8.00	4.00	$32.40
34865	Analysis	**3.68**	**7.34**	**3.30**	**29.33**
	Stork Brand Nine Six Three—Guarantee	6.00	9.00	3.00	41.40
34760	Analysis	**5.94**	9.03	3.22	41.43
	Stork Brand Ten Three Three—Guarantee	3.00	10.00	3.00	29.10
34756	Analysis	3.13	**9.79**	3.01	29.45
34757	Analysis	**2.97**	10.01	**2.90**	**28.86**
34759	Analysis	3.04	10.00	3.02	29.30
34765	Analysis	3.05	10.01	**2.91**	29.23
34767	Analysis	3.09	10.10	**2.67**	29.23
34853	Analysis	3.40	10.02	**2.67**	30.52
34860	Analysis	3.04	**9.36**	**2.87**	**28.35**
34974	Analysis	**2.91**	**9.62**	**2.75**	**27.94**
35041	Analysis	3.11	10.78	3.16	30.73
	Stork Brand Ten-Six-Seven—Guarantee	6.00	10.00	7.00	47.40
34915	Analysis	**5.51**	**8.57**	**6.54**	**42.93**
	Stork Brand Twelve-Four-Four—Guarantee	4.00	12.00	4.00	37.20
34738	Analysis	**3.96**	12.49	4.45	38.15
34747	Analysis	**3.89**	12.24	**3.75**	**36.70**
34758	Analysis	4.08	**11.70**	**3.63**	**36.76**
34872	Analysis	4.10	**11.04**	**3.71**	**36.15**
35042	Analysis	**3.86**	**10.94**	4.01	**35.31**
	Stork Brand Fifteen Five Five—Guarantee	5.00	15.00	5.00	46.50
34761	Analysis	**4.79**	**13.78**	5.67	**44.90**
34882	Analysis	5.11	**13.79**	**4.44**	**44.88**
34883	Analysis	**4.80**	**12.78**	**4.45**	**42.27**
	Houston Packing Company, Houston, Texas—				
	Ground Raw Bone—Guarantee	3.70	23.00	.....	35.05
34042	Analysis	3.84	24.48	.....	36.86
	Longview Cotton Oil Company, Longview, Texas—				
	Longview Corn and Potato Special—Guarantee	3.00	8.00	3.00	26.70
34368	Analysis	3.11	9.35	4.15	30.20
	Longview Cotton Special—Guarantee	3.00	10.00	3.00	29.10
34155	Analysis	3.27	10.08	3.56	31.09
34486	Analysis	3.02	10.84	3.11	30.33
34714	Analysis	3.07	10.40	3.34	30.42
34946	Analysis	3.03	10.14	3.62	30.15
	Longview Cotton and Corn Special—Guarantee	4.00	12.00	4.00	37.20
34153	Analysis	4.33	12.81	4.47	40.22
34484	Analysis	**3.52**	**11.58**	5.53	**36.38**
34493	Analysis	**3.93**	12.36	4.55	37.98
34511	Analysis	**3.62**	12.36	4.68	**36.74**
	Longview Crop Special—Guarantee	6.00	9.00	3.00	41.40
34370	Analysis	**5.07**	10.56	3.71	**39.94**
	Longview East Texas Cotton Special—Guarantee	2.00	10.00	2.00	23.40
34369	Analysis	2.08	11.98	3.13	27.50
34491	Analysis	2.24	11.09	3.35	27.41
34503	Analysis	2.04	10.94	2.89	25.78
34701	Analysis	2.04	11.71	2.82	26.61
34947	Analysis	2.11	10.64	2.34	25.08
	Longview Extra High Grade Fertilizer—Guarantee	6.00	18.00	6.00	55.80
34510	Analysis	6.15	**16.74**	6.73	55.85
34948	Analysis	**5.45**	**17.14**	6.29	**52.65**
	Longview Gregg County Special—Guarantee	4.00	8.00	4.00	32.40
34152	Analysis	4.08	9.79	4.71	35.76
34492	Analysis	**3.76**	10.12	4.71	34.71
34949	Analysis	4.02	8.66	4.11	33.41
	Longview Kainit—Guarantee	.....	.....	12.00	14.40
34485	Analysis	.....	.....	15.53	18.64
	Longview Supreme Cotton Grower—Guarantee	4.00	10.00	2.00	32.40
34371	Analysis	**3.91**	10.87	2.62	33.78
34700	Analysis	**3.75**	10.70	2.18	**32.34**
	Longview Truck Special Fertilizer—Guarantee	4.00	8.00	6.00	34.80
34154	Analysis	4.04	8.29	6.31	35.70

Table 10.—Analysis on commercial fertilizer. season 1928-29—(continued)

Laboratory number	Manufacturer, place of business and brand	Nitrogen—per cent	Phosphoric acid—available per cent	Potash—per cent	Valuation—per ton
	Marshall Cotton Oil Company, Marshall, Texas—				
	Marshall Corn and Potato Special—Guarantee	3.00	8.00	3.00	$26.70
34399	Analysis	3.17	9.57	3.36	29.78
	Marshall Eclipse Fertilizer—Guarantee	3.00	10.00	3.00	29.10
34719	Analysis	**2.98**	**9.34**	**2.85**	**28.04**
35015	Analysis	3.02	10.05	3.67	30.05
	Marshall Garden Fertilizer—Guarantee	4.00	8.00	6.00	34.80
34162	Analysis	4.02	9.13	**5.67**	35.85
	Marshall Nut Producer Fertilizer—Guarantee	6.00	9.00	3.00	41.40
34161	Analysis	**5.77**	9.82	3.01	**41.36**
34398	Analysis	**5.89**	9.42	3.47	41.97
	Marshall Regal Fertilizer—Guarantee	2.00	10.00	2.00	23.40
34720	Analysis	2.40	**9.24**	2.33	24.69
34939	Analysis	2.16	**9.96**	2.32	24.45
	Marshall Wonder Fertilizer—Guarantee	4.00	12.00	4.00	37.20
34165	Analysis	4.27	12.50	4.80	39.98
34400	Analysis	4.04	12.02	4.06	37.47
34406	Analysis	4.07	12.06	4.45	38.13
34721	Analysis	**3.68**	**11.50**	4.20	**35.40**
34840	Analysis	**3.87**	**11.73**	4.01	**36.31**
34940	Analysis	**3.97**	12.15	4.07	37.33
	Quick Producer Fertilizer—Guarantee	4.00	10.00	2.00	32.40
34164	Analysis	**3.97**	11.29	2.57	34.42
34407	Analysis	4.16	10.16	2.38	33.77
34841	Analysis	4.00	**9.95**	2.51	32.95
34938	Analysis	4.00	10.38	2.22	33.12
	Trucker's Delight—Guarantee	4.00	8.00	4.00	32.40
34163	Analysis	**3.61**	8.38	4.81	**32.08**
34410	Analysis	**3.91**	9.77	4.48	34.70
	Meridian Fertilizer Factory, Shreveport, Louisiana—				
	Home Mixture—Guarantee	3.00	10.00	3.00	29.10
34107	Analysis	**2.87**	10.44	3.89	30.12
34126	Analysis	3.55	10.93	4.36	34.23
34174	Analysis	3.19	10.23	3.77	31.16
34176	Analysis	3.17	**9.74**	3.31	29.93
34223	Analysis	3.66	11.36	4.69	35.73
34259	Analysis	3.02	10.02	4.86	31.44
34308	Analysis	3.20	10.32	3.52	31.00
34351	Analysis	3.40	11.38	3.44	33.09
34455	Analysis	3.32	10.75	3.60	32.16
34461	Analysis	3.24	11.12	**2.64**	31.09
34502	Analysis	3.72	11.23	3.46	34.37
34537	Analysis	3.66	10.21	4.46	34.07
34618	Analysis	3.44	11.22	3.02	32.56
34697	Analysis	**2.83**	10.04	3.32	**28.77**
34713	Analysis	**2.97**	**9.64**	4.19	29.97
34727	Analysis	**2.77**	**9.44**	3.04	**27.45**
34795	Analysis	**2.74**	10.26	3.59	**28.95**
34832	Analysis	3.24	**9.65**	3.18	29.98
34835	Analysis	3.50	10.69	3.64	32.95
34850	Analysis	3.75	**9.73**	3.07	32.24
34851	Analysis	4.38	10.25	**2.44**	34.94
34911	Analysis	3.35	**9.89**	3.01	30.56
34932	Analysis	3.28	**9.98**	**2.71**	29.99
34943	Analysis	3.93	11.26	**2.42**	34.10
	Kainit—Guarantee	.....	.....	12.00	14.40
34512	Analysis	.....	.....	13.33	16.00
	Magnolia State Formula—Guarantee	4.00	8.00	4.00	32.40
34257	Analysis	**3.80**	8.31	4.37	**32.31**
34299	Analysis	4.06	8.03	4.26	33.02
34441	Analysis	4.04	**7.74**	4.44	32.80
34457	Analysis	4.10	**7.78**	4.07	32.67
34501	Analysis	4.06	**7.10**	4.60	**32.31**
34617	Analysis	4.33	9.19	4.06	35.39

Table 10.—Analysis on commercial fertilizer, season 1928-29—(continued)

Laboratory number	Manufacturer, place of business and brand	Nitrogen—per cent	Phosphoric acid—available per cent	Potash—per cent	Valuation—per ton
	Meridian Fertilizer Factory, Shreveport, Louisiana—Continued.				
	Magnolia State Formula—Guaranteed—Continued.				
34644	Analysis	4.54	8.09	4.37	$35.38
34770	Analysis	4.06	11.81	5.37	38.88
34777	Analysis	4.02	10.36	4.37	35.76
34822	Analysis	4.53	8.85	**2.72**	34.27
34823	Analysis	**3.52**	13.06	5.37	37.75
34952	Analysis	**2.98**	**6.70**	4.57	**26.93**
35007	Analysis	4.05	8.55	4.44	33.82
	Majestic Mixture—Guarantee	5.00	15.00	5.00	46.50
34658	Analysis	5.16	**14.38**	5.28	46.82
	Manure Salts—Guarantee	.....	.....	20.00	24.00
34106	Analysis	.....	.....	31.54	37.85
	Meridian Improved Superphosphate—Guarantee	.....	20.00	.....	24.00
34300	Analysis	.....	20.04	.....	24.05
	Meridian Perfection Superphosphate—Guarantee	.....	18.00	.....	21.60
34458	Analysis	.....	20.42	.....	24.50
34462	Analysis	.....	20.08	.....	24.10
34735	Analysis	.....	19.90	.....	23.88
34824	Analysis	.....	20.00	.....	24.00
34910	Analysis	.....	18.85	.....	22.62
	Meridian Special Formula—Guarantee	3.00	9.00	.....	24.30
34105	Analysis	3.27	11.22	.....	28.18
	Perfect Guano—Guarantee	6.00	12.00	6.00	48.60
34319	Analysis	**5.84**	12.96	**5.64**	48.60
34671	Analysis	6.26	**11.79**	6.39	49.99
34683	Analysis	**5.93**	12.98	**5.88**	49.33
35006	Analysis	**5.50**	12.64	**1.53**	**41.76**
35018	Analysis	**5.78**	**11.21**	**5.18**	**45.68**
	Perfection Compound—Guarantee	4.00	12.00	4.00	37.20
34104	Analysis	4.14	**11.99**	4.48	38.40
34134	Analysis	4.12	**11.10**	4.73	37.54
34175	Analysis	4.21	**11.48**	4.41	38.02
34186	Analysis	**3.91**	12.40	4.17	37.48
34196	Analysis	4.20	**10.98**	4.30	37.24
34243	Analysis	4.07	**11.37**	4.32	**37.14**
34298	Analysis	4.07	**11.55**	4.19	37.21
34307	Analysis	**3.49**	12.79	4.46	**36.41**
34318	Analysis	4.12	12.00	4.75	38.64
34340	Analysis	**3.97**	**11.99**	4.19	37.29
34356	Analysis	4.24	**11.55**	4.25	38.04
34456	Analysis	4.25	**11.52**	4.15	37.93
34476	Analysis	4.04	12.94	4.24	38.80
34481	Analysis	4.00	12.45	4.22	38.00
34487	Analysis	4.27	12.54	4.20	39.31
34515	Analysis	**3.81**	12.03	4.23	**36.67**
34545	Analysis	4.04	12.01	4.22	37.65
34629	Analysis	4.03	12.26	4.16	37.84
34643	Analysis	4.07	**11.99**	4.21	37.76
34657	Analysis	4.11	12.39	4.05	38.23
34670	Analysis	4.18	12.23	**3.73**	37.97
34684	Analysis	4.43	12.68	4.26	41.27
34726	Analysis	4.20	12.03	4.26	38.45
34754	Analysis	4.37	12.63	4.08	39.73
34794	Analysis	**3.94**	12.35	4.24	37.64
34833	Analysis	4.14	12.43	4.60	39.07
34836	Analysis	4.02	**11.59**	4.02	**36.82**
34852	Analysis	4.22	12.47	**3.42**	38.05
35017	Analysis	4.28	**11.44**	4.51	38.40
	Southern Standard—Guarantee	4.00	10.00	2.00	32.40
34127	Analysis	4.06	10.63	2.09	34.62
34177	Analysis	**3.52**	**9.72**	2.54	**30.55**
34899	Analysis	**3.87**	**9.01**	2.67	**31.43**

Table 10.—Analysis on commercial fertilizer, season 1928-29—(continued)

Laboratory number	Manufacturer, place of business and brand	Nitrogen—per cent	Phosphoric acid—available per cent	Potash—per cent	Valuation—per ton
	Meredian Fertilizer Factury, Shreveport, Louisiana—Continued.				
	Special Guano—Guarantee	4.00	10.00	7.00	$38.40
056	Analysis	**3.69**	**9.80**	**5.70**	**35.21**
	Standard Mixture—Guarantee	2.00	10.00	2.00	23.40
185	Analysis	2.10	10.36	3.79	26.43
197	Analysis	2.41	11.77	2.33	27.77
222	Analysis	2.93	11.00	2.82	29.77
500	Analysis	2.41	11.14	2.11	26.75
548	Analysis	2.25	11.61	2.22	26.72
	Sulphate of Ammonia—Guarantee	20.00	.....	.....	90.00
737	Analysis	20.80	.....	.....	93.60
	Truck Grower—Guarantee	3.00	8.00	3.00	26.70
698	Analysis	3.02	8.33	**2.88**	27.05
	Trucker's Special—Guarantee	4.00	8.00	6.00	34.80
125	Analysis	4.45	8.35	6.01	37.27
818	Analysis	4.11	8.93	**5.56**	35.89
909	Analysis	**3.92**	9.28	6.01	35.99
019	Analysis	4.20	9.69	**5.60**	36.65
048	Analysis	4.25	8.33	**5.63**	35.89
	Mixson Brothers, Kirbyville, Texas—				
	Mixson's 8-4-4—Guarantee	4.00	8.00	4.00	32.40
580	Analysis	**3.65**	**7.82**	4.82	**31.59**
	Mixson's 10-2-2—Guarantee	2.00	10.00	2.00	23.40
560	Analysis	2.67	**9.30**	3.15	26.96
023	Analysis	2.40	**9.01**	2.84	25.02
	Mixson's 10-3-3—Guarantee	3.00	10.00	3.00	35.10
022	Analysis	4.29	**9.00**	5.28	36.45
	Mixson's 10-3-8—Guarantee	3.00	10.00	8.00	35.10
571	Analysis	3.48	**9.89**	**7.69**	36.76
020	Analysis	3.62	**9.57**	**6.88**	36.03
	Mixson's 12-4-4—Guarantee	4.00	12.00	4.00	37.20
559	Analysis	4.50	**11.56**	4.16	39.11
563	Analysis	4.12	**11.20**	4.64	37.55
021	Analysis	4.48	**10.07**	4.06	**37.11**
	Mixson's 12-6-6—Guarantee	6.00	12.00	6.00	48.60
581	Analysis	6.06	12.71	7.23	51.20
	Mixson's 15-0-6—Guarantee	.....	15.00	6.00	25.20
572	Analysis	.....	**14.56**	7.14	26.04
	Nitrate Agencies Company, New Orleans, Louisiana—				
	Chilean Nitrate of Soda—Guarantee	15.25	.....	.....	68.63
517	Analysis	15.73	.....	.....	70.79
845	Analysis	15.57	.....	.....	70.07
854	Analysis	15.57	.....	.....	70.07
858	Analysis	15.62	.....	.....	70.29
959	Analysis	15.46	.....	.....	69.57
	Chilean Nitrate of Soda-Potash—Guarantee	14.50	.....	12.00	79.65
855	Analysis	14.52	.....	18.11	86.17
	Oil Mill and Fertilizer Works, Henderson, Texas—				
	Henderson Hiland—Guarantee	6.00	12.00	6.00	48.60
361	Analysis	6.08	12.34	6.05	49.43
956	Analysis	6.01	13.02	6.35	50.29
	Henderson Nursery Special—Guarantee	6.00	9.00	3.00	41.40
353	Analysis	6.02	**8.54**	3.90	42.02
	Henderson Potato Grower—Guarantee	4.00	8.00	6.00	34.80
715	Analysis	**3.87**	8.86	7.11	36.58
	Henderson Sandy Land—Guarantee	4.00	12.00	4.00	37.20
344	Analysis	4.18	**11.71**	4.03	37.70
704	Analysis	**3.44**	13.98	**3.63**	**36.62**
955	Analysis	**3.70**	**11.71**	4.18	**35.72**

Table 10.—Analysis on commercial fertilizer, season 1928-29—(continued)

Laboratory number	Manufacturer, place of business and brand	Nitrogen—per cent	Phosphoric acid—available per cent	Potash—per cent	Valuation—per ton
	Oil Mill and Fertilizer Works, Henderson, Texas—Continued.				
	Henderson Special—Guarantee	3.00	10.00	3.00	$29.10
34343	Analysis	3.06	11.49	3.37	31.60
34703	Analysis	3.18	11.56	3.50	32.38
34954	Analysis	3.00	**9.17**	3.16	**28.29**
	Henderson Superlative—Guarantee	6.00	18.00	6.00	55.80
34359	Analysis	6.10	**16.20**	6.03	**54.13**
	Henderson 18% Superphosphate	.....	18.00	.....	21.60
34732	Analysis	.....	20.38	.....	24.46
	Henderson Tomato Grower—Guarantee	6.00	10.00	7.00	47.40
34360	Analysis	6.09	10.00	**6.70**	47.45
34957	Analysis	8.06	**9.62**	**6.18**	55.23
	Henderson Truck—Guarantee	4.00	8.00	4.00	32.40
34346	Analysis	4.10	9.08	4.47	34.71
34705	Analysis	**3.86**	11.62	4.99	37.30
	Pacific Manure and Fertilizer Company, San Francisco, California—				
	Groz-It Brand Pulverized Sheep Manure—Guarantee	1.50	.....	3.00	10.35
34037	Analysis	**1.45**	.....	3.33	10.53
	Palestine Oil Mill and Fertilizer Company, Palestine, Texas—				
	Cottonseed Meal Fertilizer—Guarantee	6.88	1.00	1.00	33.36
34543	Analysis	**6.73**	2.51	1.55	35.16
34640	Analysis	6.97	2.79	1.21	36.17
	Palestine Blood & Bone—Guarantee	2.00	10.00	2.00	23.40
34110	Analysis	**1.82**	10.14	2.40	**23.24**
34638	Analysis	2.67	**8.70**	2.39	25.33
	Palestine Blue Star 9-3-0—Guarantee	3.00	9.00	.....	24.30
34100	Analysis	3.29	9.30	.....	25.97
34261	Analysis	3.33	9.64	.....	26.56
	Palestine Blue Star 10-2-2—Guarantee	2.00	10.00	2.00	23.40
34182	Analysis	2.34	10.07	2.21	25.26
34187	Analysis	2.32	10.25	2.17	25.34
34246	Analysis	2.19	10.05	2.18	24.54
34965	Analysis	2.71	10.17	2.82	27.78
35009	Analysis	2.04	**8.94**	2.42	**22.81**
	Palestine Blue Star 12-4-4—Guarantee	4.00	12.00	4.00	37.20
34099	Analysis	**3.66**	12.63	**3.89**	**36.30**
34113	Analysis	4.18	12.18	4.24	38.52
34150	Analysis	4.18	12.56	4.02	38.70
34156	Analysis	4.29	12.47	**3.87**	38.91
34188	Analysis	4.13	12.42	4.04	38.34
34215	Analysis	4.29	12.39	**3.48**	38.36
34238	Analysis	**3.94**	13.35	**2.97**	37.31
34245	Analysis	4.06	12.61	**3.74**	37.89
34254	Analysis	**3.79**	13.25	**3.71**	37.41
34271	Analysis	4.26	12.61	4.04	39.15
34284	Analysis	4.35	12.21	4.05	39.09
34467	Analysis	4.63	12.06	**3.89**	39.98
34632	Analysis	4.26	**11.42**	4.78	38.61
34639	Analysis	4.41	**11.39**	4.97	39.48
34964	Analysis	**3.52**	12.89	**3.00**	**34.91**
	Palestine Blue Star 12-6-6—Guarantee	6.00	12.00	6.00	48.60
34117	Analysis	**5.78**	12.73	6.35	48.91
34311	Analysis	**5.74**	12.11	**5.83**	**47.36**
35008	Analysis	**5.47**	12.66	**4.77**	**45.53**
	Palestine Blue Star 15-5-5—Guarantee	5.00	15.00	5.00	46.50
34115	Analysis	5.04	15.44	5.32	47.59
34710	Analysis	**4.73**	**11.85**	9.27	46.63
	Palestine Blue Star Jumbo—Guarantee	6.00	18.00	6.00	55.80
34116	Analysis	6.29	**14.89**	6.81	54.35

Table 10.—Analysis on commercial fertilizer, season 1928-29—(continued)

Laboratory number	Manufacturer, place of business and brand	Nitrogen—per cent	Phosphoric acid—available per cent	Potash—per cent	Valuation—per ton
	Palestine Oil Mill and Fertilizer Company, Palestine, Texas—Continued.				
	Palestine Corn & Cotton—Guarantee	4.00	10.00	2.00	$32.40
34137	Analysis	4.10	10.95	2.42	34.49
34149	Analysis	4.32	10.59	2.48	35.13
34214	Analysis	4.10	10.43	2.56	34.04
	Palestine Cotton Producer—Guarantee	3.00	10.00	3.00	29.10
34102	Analysis	3.00	10.91	3.69	31.02
34111	Analysis	4.05	10.01	3.83	34.84
34131	Analysis	3.53	10.25	3.27	32.11
34260	Analysis	3.29	10.24	3.45	31.24
34285	Analysis	3.13	10.26	3.40	30.48
34468	Analysis	3.27	**9.61**	3.19	30.08
34542	Analysis	3.37	10.61	3.19	31.73
34633	Analysis	**2.91**	**9.19**	3.91	28.82
34711	Analysis	**1.78**	11.66	**1.13**	**23.36**
34797	Analysis	3.19	10.31	3.56	31.00
34966	Analysis	**2.60**	10.81	**2.96**	**28.22**
	Palestine Eighteen Per Cent Superphosphate—Guarantee	.....	18.00	.....	21.60
34253	Analysis	.....	20.29	.....	24.35
34662	Analysis	.....	**17.28**	.....	**20.74**
	Palestine Garden Special	3.00	10.00	8.00	35.10
34101	Analysis	3.89	11.56	**5.66**	38.17
	Palestine Kainit—Guarantee	.....	.....	12.40	14.88
34310	Analysis	.....	.....	13.80	16.56
	Palestine Muriate of Potash—Guarantee	.....	.....	50.00	60.00
34634	Analysis	.....	.....	**48.02**	**57.62**
34712	Analysis	.....	.....	**49.19**	**59.03**
	Palestine Nitrate of Soda—Guarantee	.....	15.00	.....	67.50
34216	Analysis	.....	15.52	.....	69.84
	Palestine Sulphate of Ammonia—Guarantee	20.00	.....	.....	90.00
34718	Analysis	20.19	.....	.....	90.86
	Palestine Sixteen Per Cent Superphosphate—Guarantee	.....	16.00	.....	19.20
34661	Analysis	.....	16.60	.....	19.92
	Palestine Tomato Special—Guarantee	4.00	8.00	6.00	34.80
34130	Analysis	4.37	8.79	6.01	37.43
34136	Analysis	4.04	9.85	**4.97**	35.96
34322	Analysis	4.30	8.50	6.34	37.16
34326	Analysis	4.82	9.14	**3.87**	37.30
	Palestine Twenty Per Cent Superphosphate—Guarantee	.....	20.00	.....	24.00
34769	Analysis	.....	**19.25**	.....	**23.10**
	Palestine Upland Cotton—Guarantee	4.00	8.00	4.00	32.40
34103	Analysis	**3.78**	9.08	4.35	33.13
34114	Analysis	4.19	**7.97**	4.95	34.36
34244	Analysis	4.01	8.56	4.38	33.58
34442	Analysis	4.21	**7.87**	4.08	33.29
34544	Analysis	4.36	8.61	**3.75**	34.45
34631	Analysis	**3.65**	**7.84**	4.40	**31.12**
34637	Analysis	**3.82**	**7.53**	4.73	**31.91**
34717	Analysis	**3.74**	8.45	**3.96**	**31.72**
34801	Analysis	**3.42**	9.07	4.24	**31.36**
34967	Analysis	**3.58**	**7.84**	**3.84**	**31.13**
	Palestine Vegetable Leader—Guarantee	6.00	10.00	7.00	47.40
34112	Analysis	**5.85**	10.90	7.42	48.31
34263	Analysis	6.04	10.70	7.43	48.94
	Pate Brothers, Sulphur Springs, Texas—				
	Pate's 8-3-3—Guarantee	3.00	8.00	3.00	26.70
34453	Analysis	3.20	12.31	**2.94**	32.70
34730	Analysis	3.17	9.18	3.66	29.68
34789	Analysis	3.04	10.57	3.08	30.06
	Pate's 8-4-4—Guarantee	4.00	8.00	4.00	32.40
34452	Analysis	4.20	11.64	4.13	37.83
34681	Analysis	4.10	12.53	**3.63**	37.85
34790	Analysis	**3.76**	9.10	4.02	32.66

Table 10.—Analysis on commercial fertilizer, season 1928-29—(continued)

Laboratory number	Manufacturer, place of business and brand	Nitrogen—per cent	Phosphoric acid—available per cent	Potash—per cent	Valuation—per ton
	Pate Brothers, Sulphur Springs, Texas—Continued.				
	Pate's 8-4-6—Guarantee	4.00	8.00	6.00	$34.80
34450	Analysis	4.18	11.04	**5.43**	38.58
35069	Analysis	4.02	10.27	**5.58**	37.11
	Pate's 10-3-3—Guarantee	3.00	10.00	3.00	29.10
34454	Analysis	3.20	11.39	3.76	32.58
34788	Analysis	3.20	12.33	3.01	32.81
34792	Analysis	3.01	10.69	3.19	30.21
34793	Analysis	**2.81**	11.29	3.09	29.91
35068	Analysis	3.18	11.60	3.68	32.65
	Pate's 12-4-4—Guarantee	4.00	12.00	4.00	37.20
34451	Analysis	4.09	13.01	4.19	39.05
34645	Analysis	4.10	13.39	4.23	39.60
34680	Analysis	4.07	12.67	4.50	38.92
	Pate's 12-6-6—Guarantee	6.00	12.00	6.00	48.60
34651	Analysis	6.12	13.83	6.14	51.51
	Pate's 18% Superphosphate—Guarantee	.....	18.00	.....	21.60
34791	Analysis	.....	19.51	.....	23.41
	Pate's 20% Superphosphate—Guarantee	.....	20.00	.....	24.00
34682	Analysis	.....	21.92	.....	26.30
34785	Analysis	.....	21.25	.....	25.50
	Pelican Fertilizer Works, Shreveport, Louisiana—				
	Pelican Perfection Formula—Guarantee	4.00	12.00	4.00	37.20
34551	Analysis	4.17	12.05	4.15	38.21
	Pittsburg Cotton Oil Company and Fertilizer Works, Pittsburg, Texas—				
	Double Circle Brand Fertilizer 833—Guarantee	3.00	8.00	3.00	26.70
34731	Analysis	3.04	8.69	3.28	28.05
	Double Circle Fertilizer No. 844—Guarantee	4.00	8.00	4.00	32.40
34439	Analysis	4.48	**7.45**	4.48	34.48
34816	Analysis	**3.30**	8.08	**3.37**	**28.59**
35055	Analysis	**3.92**	**7.53**	**3.70**	**31.12**
35065	Analysis	**3.56**	8.54	**3.03**	**29.91**
	Double Circle Fertilizer No. 846—Guarantee	4.00	8.00	6.00	34.80
34437	Analysis	4.24	8.11	6.22	36.27
35054	Analysis	4.08	6.93	**5.24**	**32.97**
	Double Circle Fertilizer No. 1033—Guarantee	3.00	10.00	3.00	29.10
34778	Analysis	**2.76**	10.34	3.19	**28.66**
34796	Analysis	3.15	10.23	3.48	30.64
34815	Analysis	3.04	10.02	3.11	29.43
34825	Analysis	3.10	10.03	**2.84**	29.40
34870	Analysis	3.02	**9.20**	**2.77**	**27.95**
35053	Analysis	3.37	**9.54**	3.06	30.29
	Double Circle Fertilizer No. 1244—Guarantee	4.00	12.00	4.00	37.20
34438	Analysis	4.29	**11.25**	4.77	38.53
34817	Analysis	4.21	12.31	4.29	38.87
34826	Analysis	4.19	**10.62**	4.06	**36.47**
34859	Analysis	4.28	**11.30**	4.16	37.81
34976	Analysis	4.03	**11.80**	4.26	37.41
	Eighteen Per Cent Superphosphate—Guarantee	.....	18.00	.....	21.60
35047	Analysis	.....	18.51	.....	22.21
	Nitrate of Soda—Guarantee	15.00	.....	.....	67.50
34871	Analysis	**14.80**	.....	.....	**66.60**
	Planters Fertilizer and Chemical Co., New Orleans, Louisiana—				
	Planters' Nitrate of Soda—Guarantee	15.00	.....	.....	67.50
34213	Analysis	15.89	.....	.....	71.51
	Planters' Plow Brand Fertilizer No. 844—Guarantee	4.00	8.00	4.00	32.40
34096	Analysis	**3.83**	8.21	4.25	**32.19**
34499	Analysis	**3.74**	8.49	**3.70**	**31.46**
34707	Analysis	4.04	8.57	4.00	33.26

Table 10.—Analysis on commercial fertilizer, season 1928-29—(continued)

Laboratory number	Manufacturer, place of business and brand	Nitrogen—per cent	Phosphoric acid—available per cent	Potash—per cent	Valuation—per ton
	Planters Fertilizer and Chemical Co., New Orleans, Louisiana—Continued.				
	Planters' Plow Brand Fertilizer No. 846—Guarantee...	4.00	8.00	6.00	$34.80
34373	Analysis	**3.92**	8.59	**5.35**	**34.37**
	Planters' Plow Brand Fertilizer No. 1033—Guarantee..	3.00	10.00	3.00	29.10
34338	Analysis	**2.96**	10.45	3.07	29.54
	Planters' Plow Brand Fertilizer No. 1042—Guarantee..	4.00	10.00	2.00	32.40
34722	Analysis	**3.58**	11.13	2.17	**32.07**
	Planters' Plow Brand Fertilizer No. 1067—Guarantee..	6.00	10.00	7.00	47.40
34402	Analysis	6.02	10.83	**6.57**	47.97
	Planters' Plow Brand Fertilizer No. 1244—Guarantee..	4.00	12.00	4.00	37.20
34120	Analysis	4.10	12.15	4.19	38.06
34412	Analysis	**3.83**	12.31	**3.98**	**36.79**
34498	Analysis	**3.92**	12.57	**3.91**	37.41
34709	Analysis	**3.81**	**11.85**	**3.78**	**35.91**
	Planters' Plow Brand Fertilizer No. 1266—Guarantee..	6.00	12.00	6.00	48.60
34118	Analysis	**5.89**	12.48	**5.88**	**48.55**
34354	Analysis	**5.88**	12.32	6.03	**48.48**
	Planter's Plow Brand Fertilizer No. 1555—Guarantee..	5.00	15.00	5.00	46.50
34119	Analysis	**4.95**	15.31	5.10	46.77
34337	Analysis	**4.98**	15.09	5.08	46.62
34409	Analysis	**4.91**	15.08	5.39	46.67
34497	Analysis	5.04	15.19	**4.93**	46.83
34708	Analysis	5.15	15.63	5.01	47.95
34834	Analysis	5.08	15.53	**4.71**	47.15
	Shreveport Fertilizer Works, Shreveport, Louisiana—				
	Lion Blood and Bone—Guarantee	2.00	10.00	2.00	23.40
34471	Analysis	2.41	10.57	2.39	26.40
	Lion Corn Food—Guarantee	3.00	8.00	3.00	26.70
34699	Analysis	3.20	8.08	3.09	27.78
	Lion Cotton Seed Meal Mixture—Guarantee	2.00	10.00	2.00	23.40
34521	Analysis	**1.90**	10.20	3.02	24.41
34554	Analysis	2.47	10.52	2.29	26.49
	Lion Extrafine Mixture—Guarantee	4.00	10.00	2.00	32.40
34288	Analysis	4.12	10.79	2.66	34.68
34673	Analysis	4.00	10.36	3.37	34.47
	Lion Nitrate of Soda—Guarantee	15.00	.....	.....	67.50
34552	Analysis	15.41	.....	.....	69.35
	Lion Potato Producer—Guarantee	4.00	8.00	4.00	32.40
34317	Analysis	4.05	8.46	**3.52**	32.60
34418	Analysis	**3.81**	9.05	4.71	33.66
34641	Analysis	**3.90**	**7.82**	5.81	33.90
34900	Analysis	**3.44**	**7.42**	4.05	**29.24**
	Lion Prolific Fruiter—Guarantee	6.00	9.00	3.00	41.40
34800	Analysis	**5.55**	9.64	3.35	**40.57**
34878	Analysis	**5.77**	9.34	3.09	**40.89**
	Lion Special Cotton—Guarantee	5.00	15.00	5.00	46.50
34505	Analysis	5.22	15.39	5.06	48.03
34799	Analysis	5.38	**14.92**	4.94	48.04
	Lion Superfine Superphosphate—Guarantee	.....	18.00	.....	21.60
34465	Analysis	.....	19.21	.....	23.05
	Lion Superior Blood & Bone—Guarantee	3.00	10.00	3.00	29.10
34746	Analysis	3.25	**9.44**	**2.91**	29.45
	Lion Superior Cotton Grower—Guarantee	4.00	12.00	4.00	37.20
34286	Analysis	4.04	12.59	4.11	38.22
34316	Analysis	4.26	12.37	4.36	39.24
34417	Analysis	**3.71**	**11.31**	4.54	**35.72**
34464	Analysis	**3.93**	12.76	4.01	37.81
34520	Analysis	4.14	12.40	**3.57**	37.79
34553	Analysis	4.24	12.81	4.11	39.38
34642	Analysis	4.46	12.02	**3.79**	39.04
34725	Analysis	4.01	**11.54**	4.76	37.61
34744	Analysis	4.25	12.23	**3.77**	38.33
35043	Analysis	**3.84**	**9.80**	4.57	**34.52**

Table 10.—Analysis on commercial fertilizer, season 1928-29—(continued)

Laboratory number	Manufacturer, place of business and brand	Nitrogen—per cent	Phosphoric acid—available per cent	Potash—per cent	Valuation—per ton
	Shreveport Fertilizer Works, Shreveport, Louisiana—Continued.				
	Lion Superior Meal Formula—Guarantee	3.00	10.00	3.00	$29.10
34466	Analysis	**2.61**	10.52	3.32	**28.35**
34686	Analysis	3.47	**9.91**	3.30	31.47
34901	Analysis	**2.71**	10.15	**2.76**	**27.69**
35044	Analysis	3.04	10.55	4.41	31.63
	Lion Superior Superphosphate—Guarantee	.....	20.00	.....	24.00
34519	Analysis	.....	**18.34**	.....	**22.01**
34687	Analysis	.....	**19.37**	.....	**23.24**
	Lion Sweet Potato Special—Guarantee	4.00	10.00	7.00	38.40
34287	Analysis	4.07	11.28	**5.54**	38.51
	Lion Tomato Special—Guarantee	4.00	8.00	6.00	34.80
34419	Analysis	**3.78**	8.19	6.48	**34.62**
	Lion Veribest—Guarantee	8.00	8.00	4.00	50.40
34807	Analysis	**7.29**	10.44	**3.08**	**49.04**
	Smith County Cotton Oil and Fertilizer Company, Tyler, Texas—				
	Smico 8-4-4—Guarantee	4.00	8.00	4.00	32.40
34122	Analysis	4.36	8.96	4.67	35.97
34171	Analysis	4.26	8.36	4.98	35.08
34315	Analysis	4.15	8.72	4.59	34.65
34669	Analysis	**3.84**	8.16	4.65	32.65
35011	Analysis	**3.95**	8.30	4.90	33.62
35029	Analysis	**3.70**	8.23	4.17	**31.53**
	Smico 8-4-6—Guarantee	4.00	8.00	6.00	34.80
34168	Analysis	4.04	8.80	6.49	36.53
34677	Analysis	**3.88**	8.22	**5.82**	**34.30**
	Smico 8-8-4—Guarantee	8.00	8.00	4.00	50.40
34167	Analysis	8.15	8.54	4.53	52.37
	Smico 9-3-0—Guarantee	3.00	9.00	.....	24.30
34121	Analysis	**2.92**	9.76	.....	24.85
34158	Analysis	3.18	10.34	.....	26.71
	Smico 9-6-3—Guarantee	6.00	9.00	3.00	41.40
34169	Analysis	**5.96**	9.52	3.57	42.52
	Smico 10-2-2—Guarantee	2.00	10.00	2.00	23.40
34668	Analysis	2.13	10.62	**1.70**	24.37
	Smico 10-3-3—Guarantee	3.00	10.00	3.00	29.10
34170	Analysis	3.36	10.71	3.53	32.21
34314	Analysis	3.09	11.05	3.58	31.33
34963	Analysis	**2.94**	10.60	3.25	29.85
35030	Analysis	3.08	11.08	3.24	31.05
	Smico 10-4-2—Guarantee	4.00	10.00	2.00	32.40
34649	Analysis	4.05	11.26	2.56	34.81
	Smico 10-6-7—Guarantee	6.00	10.00	7.00	47.40
34674	Analysis	**5.32**	10.57	7.76	**45.93**
	Smico 12-4-4—Guarantee	4.00	12.00	4.00	37.20
34166	Analysis	4.16	12.47	4.03	38.52
34313	Analysis	4.10	12.36	4.38	38.54
34676	Analysis	**3.78**	12.04	4.10	**36.38**
35039	Analysis	**3.82**	**11.36**	4.21	**35.87**
	Smico 15-5-5—Guarantee	5.00	15.00	5.00	46.50
34675	Analysis	**4.93**	**14.80**	5.04	**46.00**
35040	Analysis	**4.77**	15.90	5.43	47.07
	Swift & Company Fertilizer Works, Shreveport, La.—				
	Nitrate of Soda—Guarantee	15.00	.....	.....	67.50
34066	Analysis	16.08	.....	.....	72.36
34146	Analysis	16.13	.....	.....	72.59
	Manure Salts 20%—Guarantee	.....	.....	20.00	24.00
34384	Analysis	.....	.....	20.37	24.44
	Muriate of Potash—Guarantee	.....	.....	50.00	60.00
34157	Analysis	.....	.....	50.89	61.07
34562	Analysis	.....	.....	50.64	60.77
34635	Analysis	.....	.....	52.61	63.13

Table 10.—Analysis on commercial fertilizer, season 1928-29—(continued)

Laboratory number	Manufacturer, place of business and brand	Nitrogen—per cent	Phosphoric acid—available per cent	Potash—per cent	Valuation—per ton
	Swift & Company Fertilizer Works, Shreveport La.—Continued.				
	Swift's Blood, Bone & Potash—Guarantee	4.00	10.00	7.00	$38.40
34017	Analysis	4.05	10.11	7.81	39.73
	Swift's Red Steer 8-3-3—Guarantee	3.00	8.00	3.00	26.70
34108	Analysis	3.13	8.41	3.31	28.15
34588	Analysis	3.19	8.74	3.02	28.47
	Swift's Red Steer 8-4-4—Guarantee	4.00	8.00	4.00	32.40
34172	Analysis	4.00	8.31	4.18	32.99
34240	Analysis	4.04	8.01	4.45	33.13
34303	Analysis	**3.93**	8.03	4.14	**32.30**
34321	Analysis	4.27	8.56	**3.64**	33.86
34350	Analysis	4.02	8.50	4.05	33.15
34366	Analysis	4.09	8.47	4.33	33.77
34422	Analysis	4.08	8.06	4.32	33.21
34444	Analysis	4.02	8.47	**3.89**	32.92
34577	Analysis	4.04	8.48	4.29	33.51
34647	Analysis	4.34	8.04	**3.85**	33.80
34775	Analysis	4.02	8.67	**3.89**	33.16
34805	Analysis	**3.85**	8.30	4.02	**32.11**
34828	Analysis	4.02	8.63	**3.39**	32.52
34837	Analysis	**3.83**	8.50	**3.38**	**31.50**
34904	Analysis	**3.90**	8.21	**3.44**	**31.53**
34906	Analysis	4.04	8.23	**3.67**	32.46
34917	Analysis	**3.97**	8.32	**3.84**	32.46
35033	Analysis	**3.93**	8.46	4.03	32.68
35064	Analysis	**3.88**	8.00	4.07	**31.94**
	Swift's Red Steer 8-4-6—Guarantee	4.00	8.00	6.00	34.80
34032	Analysis	4.12	8.04	6.29	35.74
34035	Analysis	4.21	8.20	6.41	36.48
34094	Analysis	4.06	8.16	6.02	35.28
34195	Analysis	4.13	8.16	**5.39**	34.85
34381	Analysis	**3.94**	9.36	**4.76**	**34.67**
34604	Analysis	**3.67**	**7.62**	6.49	**33.45**
35050	Analysis	**3.76**	**7.14**	6.28	**33.03**
	Swift's Red Steer 8-8-4—Guarantee	8.00	8.00	4.00	50.40
34302	Analysis	8.25	8.25	4.10	51.95
	Swift's Red Steer 9-3-0—Guarantee	3.00	9.00	.....	24.30
34109	Analysis	3.00	9.01	.....	24.31
	Swift's Red Steer 9-6-3—Guarantee	6.00	9.00	3.00	41.40
34611	Analysis	6.02	9.26	3.04	41.85
	Swift's Red Steer 10-2-2—Guarantee	2.00	10.00	2.00	23.40
34202	Analysis	2.25	10.73	2.09	25.52
34251	Analysis	2.17	10.00	2.30	24.53
34691	Analysis	2.15	10.53	**1.71**	24.37
34723	Analysis	2.80	10.03	2.55	27.70
35004	Analysis	2.30	10.04	2.27	25.12
35051	Analysis	2.10	**9.70**	2.05	23.55
	Swift's Red Steer 10-3-3—Guarantee	3.00	10.00	3.00	29.10
34183	Analysis	3.11	10.56	3.36	30.70
34235	Analysis	3.30	10.05	3.41	31.00
34345	Analysis	3.11	10.06	**2.46**	**29.02**
34421	Analysis	3.08	10.06	3.06	29.60
34445	Analysis	3.42	10.33	3.11	31.52
34459	Analysis	3.31	10.43	3.15	31.20
34472	Analysis	3.10	**9.40**	3.10	**28.95**
34610	Analysis	3.15	10.49	**2.94**	30.30
34660	Analysis	3.20	10.28	3.10	30.46
34724	Analysis	3.10	10.39	**2.90**	29.90
34733	Analysis	3.18	10.43	3.03	30.47
34745	Analysis	3.14	10.90	3.02	30.83
34774	Analysis	3.09	**9.98**	**2.80**	29.25
34827	Analysis	3.12	10.28	3.02	30.00
34928	Analysis	3.26	10.29	3.06	30.69
34934	Analysis	3.13	10.14	**2.97**	29.82

Table 10.—Analysis on commercial fertilizer, season 1928-29—(continued)

Laboratory number	Manufacturer, place of business and brand	Nitrogen—per cent	Phosphoric acid—available per cent	Potash—per cent	Valuation—per ton
	Swift & Company Feytilizer Works, Fhreveport, La.—Continued.				
	Swift's Red Steer 10-3-3—Guarantee—Continued.	3.00	10.00	3.00	$29.10
34942	Analysis	3.11	10.24	**2.89**	29.76
34950	Analysis	3.28	10.37	3.17	31.00
34969	Analysis	3.37	10.48	**2.69**	30.98
35003	Analysis	3.09	**9.81**	3.32	29.66
35016	Analysis	3.22	**9.68**	3.21	29.96
35049	Analysis	**2.92**	**9.87**	3.04	**28.63**
	Swift's Red Steer 10-3-8—Guarantee	3.00	10.00	8.00	35.10
34378	Analysis	3.16	10.16	8.07	36.09
34567	Analysis	3.08	**9.67**	8.62	35.80
	Swift's Red Steer 10-6-7—Guarantee	6.00	10.00	7.00	47.40
34019	Analysis	6.11	10.16	7.36	48.52
34022	Analysis	6.11	**9.67**	**6.85**	**47.32**
34023	Analysis	**5.76**	10.82	**6.59**	**46.81**
34034	Analysis	6.14	10.67	**6.82**	48.61
34061	Analysis	**5.80**	10.38	8.27	48.48
34065	Analysis	6.02	10.73	**6.07**	**47.25**
34069	Analysis	6.12	10.65	**6.17**	47.72
34073	Analysis	6.39	10.26	7.08	49.57
34079	Analysis	**5.95**	10.36	7.27	47.93
34191	Analysis	**5.07**	11.72	**6.55**	**44.74**
34367	Analysis	6.46	**9.64**	8.63	51.00
34839	Analysis	**5.43**	12.41	**5.28**	**45.67**
	Swift's Red Steer 12-0-4—Guarantee	.....	12.00	4.00	19.20
34199	Analysis	.....	12.48	**3.93**	19.70
	Swift's Red Steer 12-4-4—Guarantee	4.00	12.00	4.00	37.20
34013	Analysis	4.26	12.46	4.18	39.14
34029	Analysis	4.07	12.37	4.17	38.16
34072	Analysis	4.36	12.54	4.32	39.85
34078	Analysis	4.15	12.26	4.59	38.90
34084	Analysis	4.13	12.38	4.38	38.71
34128	Analysis	4.28	**11.95**	4.63	39.16
34143	Analysis	4.26	12.00	4.44	38.90
34173	Analysis	4.13	12.44	4.14	38.49
34181	Analysis	4.10	12.19	4.52	38.50
34184	Analysis	4.20	12.08	4.63	38.96
34200	Analysis	4.10	12.26	4.33	38.36
34201	Analysis	4.16	12.34	4.14	38.50
34206	Analysis	4.14	12.13	4.52	38.61
34217	Analysis	4.15	12.53	4.07	38.60
34236	Analysis	4.44	12.60	4.14	40.07
34239	Analysis	4.20	12.17	4.45	38.84
34250	Analysis	4.16	12.03	4.47	38.52
34262	Analysis	4.25	12.62	4.36	39.50
34270	Analysis	4.19	12.69	4.19	39.12
34296	Analysis	4.20	12.21	4.38	38.81
34301	Analysis	4.25	12.17	4.25	38.83
34365	Analysis	4.13	12.35	4.18	38.43
34420	Analysis	4.28	12.44	4.22	39.20
34443	Analysis	4.47	12.38	4.18	40.00
34460	Analysis	4.40	12.48	4.00	39.58
34477	Analysis	4.18	12.51	4.31	38.99
34488	Analysis	4.23	12.66	4.30	39.39
34496	Analysis	4.21	12.36	4.06	38.65
34509	Analysis	4.23	12.31	4.44	39.14
34527	Analysis	4.22	12.31	4.06	38.63
34529	Analysis	4.20	12.26	4.09	38.52
34530	Analysis	4.11	12.10	**3.76**	37.53
34531	Analysis	**3.95**	12.73	4.12	38.00
34564	Analysis	4.34	**11.56**	4.31	38.57
34579	Analysis	4.19	**11.80**	4.39	38.29
34605	Analysis	4.15	12.30	4.62	38.98
34609	Analysis	4.23	**11.81**	4.45	38.55

Table 10.—Analysis on commercial fertilizer, season 1928-29—(continued)

Laboratory number	Manufacturer, place of business and brand	Nitrogen—per cent	Phosphoric acid—available per cent	Potash—per cent	Valuation—per ton
	Swift & Company Fertilizer Works, Shreveport, La.—Continued.				
	Swift's Red Steer 12-4-4—Guarantee.				
34636	Analysis	4.06	13.09	4.15	$38.96
34659	Analysis	4.31	12.81	4.19	39.80
34692	Analysis	4.28	12.64	**3.78**	38.97
34741	Analysis	4.21	12.78	**3.90**	38.97
34751	Analysis	4.03	12.70	**3.86**	38.01
34771	Analysis	4.03	12.03	**3.96**	37.33
34806	Analysis	4.23	12.57	4.27	39.24
34813	Analysis	4.11	12.71	**3.94**	38.48
34879	Analysis	4.23	12.95	4.14	39.55
34905	Analysis	4.17	12.52	**3.62**	38.13
34916	Analysis	4.21	12.27	**3.84**	38.28
34933	Analysis	**3.91**	12.04	4.11	**36.98**
34951	Analysis	4.31	12.10	4.02	38.74
34958	Analysis	4.04	12.05	4.03	37.48
34968	Analysis	4.34	**11.73**	**3.91**	38.30
34975	Analysis	4.00	12.33	**3.77**	37.32
35005	Analysis	4.11	**11.39**	4.33	37.37
45014	Analysis	4.26	**11.79**	4.31	38.49
35061	Analysis	**3.95**	11.71	4.19	36.86
	Swift's Red Steer 12-6-6—Guarantee	6.00	12.00	6.00	48.60
34076	Analysis	6.05	12.36	6.16	49.45
34086	Analysis	**5.89**	12.68	**5.69**	**48.56**
34129	Analysis	6.19	12.46	6.03	50.05
34145	Analysis	6.24	12.37	6.47	50.58
34198	Analysis	**5.45**	14.56	**5.02**	**48.02**
34252	Analysis	**5.95**	12.27	6.54	49.35
34295	Analysis	**5.84**	12.70	6.64	49.49
34320	Analysis	6.17	12.50	6.13	50.13
34411	Analysis	6.15	12.38	6.35	50.16
34561	Analysis	**5.94**	12.12	**5.82**	**48.25**
34576	Analysis	6.25	12.63	6.05	50.55
34812	Analysis	6.06	13.37	**4.95**	49.25
	Swift's Red Steer 15-0-6—Guarantee	.....	15.00	6.00	25.20
34024	Analysis	.....	**13.08**	**5.85**	**22.72**
34049	Analysis	.....	15.88	**5.85**	26.08
	Swift's Red Steer 15-5-5—Guarantee	5.00	15.00	5.00	46.50
34030	Analysis	5.22	15.61	5.29	48.57
34060	Analysis	5.06	15.96	5.27	48.24
34071	Analysis	5.29	**14.85**	5.60	48.35
34081	Analysis	5.11	15.45	5.24	47.83
34180	Analysis	5.26	**14.82**	**4.74**	47.14
34237	Analysis	5.14	15.08	5.47	47.78
34294	Analysis	5.20	15.13	5.64	48.33
34372	Analysis	5.40	15.49	5.28	49.23
34489	Analysis	5.19	15.24	5.21	47.90
34528	Analysis	5.12	15.22	**4.67**	46.90
34838	Analysis	5.26	15.54	5.10	48.44
	Swift's Red Steer 16% Superphosphate—Guarantee	.....	16.00	.....	19.20
34016	Analysis	.....	16.27	.....	19.52
34018	Analysis	.....	16.95	.....	20.34
34249	Analysis	.....	17.17	.....	20.60
34539	Analysis	.....	16.80	.....	20.16
	Swift's Red Steer 18% Superphosphate—Guarantee	.....	18.00	.....	21.60
34147	Analysis	.....	19.16	.....	22.99
34248	Analysis	.....	19.56	.....	23.47
34408	Analysis	.....	19.55	.....	23.46
34568	Analysis	.....	20.41	.....	24.49
	Swift's Red Steer 20% Superphosphate—Guarantee	.....	20.00	.....	24.00
34097	Analysis	.....	20.17	.....	24.20
34247	Analysis	.....	22.10	.....	26.52
34573	Analysis	.....	21.67	.....	26.00
34678	Analysis	.....	20.59	.....	24.71

Table 10.—Analysis on commercial fertilizer, season 1928-29—(continued)

Laboratory number	Manufacturer, place of business and brand	Nitrogen—per cent	Phosphoric acid—available per cent	Potash—per cent	Valuation—per ton
	Swift & Company Fertilizer Works, Shreveport, La.—Continued.				
	Vigoro—Guarantee	4.00	12.00	4.00	$37.20
34021	Analysis	4.25	13.29	4.12	40.02
34027	Analysis	4.17	12.55	4.45	39.17
34050	Analysis	4.19	12.85	4.26	39.39
34080	Analysis	4.01	12.84	4.42	38.76
34095	Analysis	4.29	12.60	4.13	39.39
34589	Analysis	4.07	12.31	4.38	38.35
	Temple Cotton Oil Company, Temple, Texas—				
	Quapaw Brand Nitrate of Soda—Guarantee	15.00	.....	.....	67.50
34874	Analysis	15.81	.....	.....	71.15
	Texas Chemical Company, Houston, Texas—				
	T. C. C. Brand Raw Bone Meal—Guarantee	3.25	17.00	.....	28.23
34098	Analysis	3.43	17.14	.....	29.15
34606	Analysis	3.78	**11.87**	.....	**26.51**
	Texas Farm Bureau Service Corporation, Dallas, Texas—				
	No. 846 Farm Bureau Fertilizer—Guarantee	4.00	8.00	6.00	34.80
34944	Analysis	**3.41**	8.43	6.45	**33.21**
	No. 963 Farm Bureau Fertilizer—Guarantee	6.00	9.00	3.00	41.40
34802	Analysis	**5.80**	**8.83**	3.04	**40.35**
	No. 1033 Farm Bureau Fertilizer—Guarantee	3.00	10.00	3.00	29.10
34280	Analysis	3.00	10.09	3.02	29.23
34339	Analysis	3.17	**9.60**	3.21	29.64
34348	Analysis	3.04	10.10	3.04	29.45
34896	Analysis	**2.89**	**9.35**	**2.80**	**27.59**
34994	Analysis	3.09	**9.68**	**2.85**	**28.95**
	No. 1042 Farm Bureau Fertilizer—Guarantee	4.00	10.00	2.00	32.40
34276	Analysis	**3.87**	10.00	2.78	32.76
34281	Analysis	4.02	10.00	2.55	33.16
34349	Analysis	4.03	**9.63**	2.37	32.54
34992	Analysis	4.02	**8.97**	2.20	**31.49**
	No. 1244 Farm Bureau Fertilizer—Guarantee	4.00	12.00	4.00	37.20
34309	Analysis	4.09	**11.75**	4.28	37.65
34347	Analysis	4.20	**11.62**	4.17	37.84
34538	Analysis	4.07	**11.77**	4.17	37.44
34653	Analysis	4.09	12.21	4.25	38.16
34945	Analysis	4.02	**11.94**	4.45	37.76
	No. 1555 Farm Bureau Fertilizer—Guarantee	5.00	15.00	5.00	46.50
34085	Analysis	5.74	**12.92**	5.18	47.55
	18% Farm Bureau Superphosphate—Guarantee	.....	18.00	.....	21.60
34304	Analysis	.....	18.13	.....	21.76
34652	Analysis	.....	18.84	.....	22.61
	Thomas Self, Crockett, Texas—				
	Crockett 8-4-4 Fertilizer—Guarantee	4.00	8.00	4.00	32.40
34625	Analysis	4.13	8.55	4.44	34.18
	Crockett 9-6-3 Fertilizer—Guarantee	6.00	9.00	3.00	41.40
34619	Analysis	**5.54**	9.89	4.42	42.10
	Crockett 10-2-2—Guarantee	2.00	10.00	2.00	23.40
34623	Analysis	2.22	**6.16**	2.52	**20.40**
	Crockett 10-3-3—Guarantee	3.00	10.00	3.00	29.10
34624	Analysis	**2.73**	**5.63**	3.24	**22.94**
34999	Analysis	3.31	**8.13**	**2.91**	**28.15**
	Crockett 12-4-4 Fertilizer—Guarantee	4.00	12.00	4.00	37.20
34608	Analysis	4.02	**7.78**	4.47	**32.79**
34630	Analysis	5.07	13.92	5.18	45.74
34997	Analysis	4.03	**10.48**	4.42	**36.02**
	Crockett 15-5-5 Fertilizer—Guarantee	5.00	15.00	5.00	46.50
34620	Analysis	**4.94**	**12.01**	5.02	**42.66**
34998	Analysis	**4.34**	**12.09**	**4.42**	**39.24**
	Crockett 18% Superphosphate—Guarantee	.....	18.00	.....	21.60
34268	Analysis	.....	19.99	.....	23.99

Table 10.—Analysis on commercial fertilizer, season 1928-29—(continued)

Laboratory number	Manufacturer, place of business and brand	Nitrogen—per cent	Phosphoric acid—available per cent	Potash—per cent	Valuation—per ton
	Tri-State Fertilizer and Lumber Company, Shreveport, Louisiana—				
	Red Diamond 8-4-4 Fertilizer—Guarantee	4.00	8.00	4.00	$32.40
34888	Analysis	**3.97**	**6.58**	**3.63**	**30.13**
	Red Diamond 10-3-3 Fertilizer—Guarantee	3.00	10.00	3.00	29.10
34440	Analysis	**2.92**	10.31	3.22	29.37
34523	Analysis	**2.72**	10.31	3.18	**28.43**
34889	Analysis	3.01	**8.71**	3.20	**27.84**
	Red Diamond 12-4-4 Fertilizer—Guarantee	4.00	12.00	4.00	37.20
34786	Analysis	4.37	12.65	**3.49**	39.04
34873	Analysis	**3.98**	**10.44**	4.59	**35.95**
	Red Diamond 18% Superphosphate—Guarantee	.....	18.00	.....	21.60
34524	Analysis	.....	**16.28**	.....	**19.54**
	Tyler Fertilizer Company, Tyler, Texas—				
	Heart Brand Fertilizer No. 844—Guarantee	4.00	8.00	4.00	32.40
34665	Analysis	4.26	8.37	4.28	34.35
35028	Analysis	**3.82**	8.33	**3.53**	**31.43**
	Heart Brand Fertilizer No. 963—Guarantee	6.00	9.00	3.00	41.40
34193	Analysis	6.18	**8.78**	3.49	42.54
	Heart Brand Fertilizer No. 1033—Guarantee	3.00	10.00	3.00	29.10
34192	Analysis	3.90	**9.46**	**2.47**	31.86
34335	Analysis	3.16	10.07	3.43	30.42
34663	Analysis	3.37	10.14	3.35	31.36
	Heart Brand Fertilizer No. 1042—Guarantee	4.00	10.00	2.00	32.40
34194	Analysis	4.45	**9.76**	2.38	34.60
34666	Analysis	4.16	**9.62**	2.52	33.28
35027	Analysis	4.03	**9.74**	2.44	32.76
	Heart Brand Fertilizer No. 1244—Guarantee	4.00	12.00	4.00	37.20
34334	Analysis	4.01	**11.84**	4.24	37.35
34664	Analysis	4.25	11.47	4.55	38.35
35026	Analysis	**3.71**	11.11	4.53	**35.47**
	Twenty Per Cent Superphosphate—Guarantee	.....	20.00	.....	24.00
34336	Analysis	.....	20.43	.....	24.52
	Virginia-Carolina Chemical Corporation, Shreveport, Louisiana—				
	Kainit—Guarantee	.....	.....	12.00	14.40
34382	Analysis	.....	.....	12.69	15.23
	Muriate of Potash—Guarantee	.....	.....	50.00	60.00
34849	Analysis	.....	.....	51.99	62.39
	Nitrate of Soda—Guarantee	15.00	.....	.....	67.50
34831	Analysis	15.42	.....	.....	69.39
	V. C. Big Giant Crop Grower—Guarantee	6.00	12.00	6.00	48.60
34555	Analysis	**3.74**	12.68	**4.40**	**37.33**
34706	Analysis	**5.70**	13.57	**3.67**	**46.33**
	V. C. Blood, Bone & Potash—Guarantee	2.00	10.00	2.00	23.40
34514	Analysis	2.29	11.21	2.26	26.47
34565	Analysis	2.06	10.18	**1.93**	23.81
34566	Analysis	2.11	**9.79**	2.02	23.67
34569	Analysis	2.13	10.33	2.08	24.49
34600	Analysis	2.06	10.03	**1.76**	23.42
	V. C. Trucker—Guarantee	4.00	8.00	4.00	32.40
34632	Analysis	4.30	8.31	4.15	34.30
	V. C. Georgia State Grange—Guarantee	2.00	10.00	2.00	23.40
34550	Analysis	2.06	**9.61**	2.01	**23.21**
34655	Analysis	**1.99**	10.53	**1.76**	23.71
35002	Analysis	**1.91**	10.42	**1.77**	**23.22**
	V. C. Good Luck Fertilizer—Guarantee	4.00	8.00	4.00	32.40
34139	Analysis	4.14	**7.73**	4.12	32.85
34352	Analysis	4.16	**7.45**	4.27	32.88
34414	Analysis	4.10	8.67	**3.76**	**33.36**
34667	Analysis	**3.69**	10.41	**3.36**	33.13
34716	Analysis	**3.63**	9.09	**3.48**	**31.43**
34776	Analysis	4.00	**7.85**	4.27	32.54

Table 10.—Analysis on commercial fertilizer, season 1928-29—(continued)

Laboratory number	Manufacturer, place of business and brand	Nitrogen—per cent	Phosphoric acid—available per cent	Potash—per cent	Valuation—per ton
	Virginia-Carolina Chemical Corporation, Shreveport, Louisiana—Continued.				
	V. C. Good Luck Fertilizer—Guarantee—Continued.	4.00	8.00	4.00	$32.40
34829	Analysis	**3.73**	8.14	4.04	**31.41**
34846	Analysis	**3.59**	8.50	4.01	**31.17**
34902	Analysis	**3.94**	8.83	**3.83**	32.93
34953	Analysis	**3.41**	10.22	**3.37**	**31.65**
	V. C. High Grade Potash Compound—Guarantee	.....	15.00	6.00	25.20
34478	Analysis	.....	18.40	6.36	26.03
	V. C. Indian Brand Fertilizer—Guarantee	4.00	12.00	4.00	37.20
34138	Analysis	4.20	12.07	4.56	38.85
34224	Analysis	4.34	**11.89**	4.62	39.34
34297	Analysis	4.48	**11.48**	4.59	39.45
34358	Analysis	4.47	**11.93**	4.06	39.31
34380	Analysis	4.24	12.13	4.44	38.97
34415	Analysis	4.58	12.11	4.29	40.29
34480	Analysis	4.21	12.41	4.25	38.94
34536	Analysis	**3.87**	12.13	4.18	**37.00**
34556	Analysis	**3.72**	12.70	4.23	**37.06**
34578	Analysis	**3.52**	13.06	4.02	**36.33**
34650	Analysis	4.03	12.13	4.13	37.66
34656	Analysis	**3.79**	13.00	**3.52**	**36.88**
34773	Analysis	4.16	13.06	**3.80**	38.95
34847	Analysis	4.16	**11.32**	5.01	38.31
34893	Analysis	**2.87**	14.38	5.33	**36.58**
	V. C. Prolific Cotton Grower—Guarantee	3.00	10.00	3.00	29.10
34225	Analysis	3.47	10.04	3.34	31.68
34357	Analysis	3.12	10.04	3.65	30.47
34416	Analysis	3.23	**9.84**	3.17	30.15
34752	Analysis	3.13	10.10	3.70	30.65
34755	Analysis	3.24	10.08	3.36	30.71
34830	Analysis	**2.77**	10.76	3.26	29.29
34895	Analysis	**2.98**	**9.35**	3.66	**29.02**
34903	Analysis	**2.80**	10.53	3.06	**28.91**
	V. C. Satsuma Special—Guarantee	4.00	8.00	6.00	34.80
34226	Analysis	**3.90**	8.49	6.59	35.61
	V. C. Stonewall High Grade Guano—Guarantee	3.00	10.00	8.00	35.10
34479	Analysis	**2.90**	**9.52**	**7.87**	**33.91**
34601	Analysis	**2.87**	10.84	8.28	35.87
	V. C. Super 25 Fertilizer—Guarantee	5.00	15.00	5.00	46.50
34363	Analysis	**3.53**	15.12	5.84	**41.04**
34383	Analysis	**2.99**	16.36	**2.88**	**36.55**
34772	Analysis	**4.69**	**13.49**	**4.90**	**43.18**
34843	Analysis	**4.81**	15.88	**4.44**	**46.04**
	V. C. Super 30 Fertilizer—Guarantee	6.00	18.00	6.00	55.80
34289	Analysis	**5.89**	**17.25**	6.76	**55.32**
34842	Analysis	**5.31**	**14.89**	**5.34**	**48.18**
	V. C. Truckers Special—Guarantee	4.00	8.00	6.00	34.80
34140	Analysis	**3.48**	9.71	**5.75**	**34.21**
34364	Analysis	**3.91**	8.63	6.27	35.48
34375	Analysis	**3.89**	8.05	6.53	35.01
34599	Analysis	**3.82**	8.26	6.15	**34.48**
35058	Analysis	**3.90**	8.10	**5.27**	**33.39**
	V. C. 16¾ Superphosphate—Guarantee	.....	16.00	.....	19.20
34374	Analysis	.....	17.24	.....	20.69
34848	Analysis	.....	16.64	.....	19.97
34908	Analysis	.....	18.77	.....	22.52
	V. C. 18% Superphosphate—Guarantee	.....	18.00	.....	21.60
34379	Analysis	.....	18.57	.....	22.28
34570	Analysis	.....	19.05	.....	22.86
34654	Analysis	.....	18.87	.....	22.64
	V. C. Victor High Grade Fertilizer—Guarantee	6.00	9.00	3.00	41.40
34894	Analysis	**5.16**	9.28	4.29	**39.51**